A STUDY ABOUT USE OF ICT AS AN EDUCATIONAL TOOL IN SECONDARY SCHOOL EDUCATION

SHILPA SINGH
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A STUDY ABOUT USE OF ICT AS AN EDUCATIONAL TOOL IN SECONDARY SCHOOL EDUCATION

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Message from the Desk of Editor

The International Journal of Indian Psychology gives emphasis to the development and retaining of outstanding people. It empowers people to maximize their potential contribution and encourage them to be entrepreneurial. Quality Control - By implementing the strong quality measures & amp; intellectual property law; the journal is eager to develop the strong coordination with researchers, academics & industrial practitioners. Innovation - Being a high energy, fast moving, decisive organization with a strong tendency for action; International Journal of Indian Psychology is constantly looking for new ideas & suggestions.

Mile stone of the journal:
Currently, the journal's Achievement is becoming a major international research journal editors and thesis research. We acquire, develop, market and distribute the knowledge through the dissemination of academics and practitioners from around the world. The journal published by maintains the highest standards of quality, integrated newsrooms by researchers around the world.

At last, I would like to thank *RED'SHINE Publication, Pvt. Ltd*. for this keepsake, and my editorial team, technical team, designing team, promoting team, indexing team, authors and well wishers, who are promoting this journal. As well as I also thankful to *Indian Psychological Association* and President *Prof. Tarni Jee* for gives review team, I also thank you to all Indian Psychological Association members for support us. With these words, I conclude and promise that the standards policies will be maintained. We hope that the research featured here sets up many new milestones. I look forward to make this endeavour very meaningful.

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ABSTRACT

ICT is now an integral part of our society, and must be implemented into schools in an effective way. ICT is a collection of different forms of Computer and Communications devices as well as the software used to manipulate, modification, create, store, transmit, receive, interpret, information in its various formats. ICT include both hardware devices and the software that allow the hardware devices to carry out or to be used for their intended functions. ICT allow exchange of data and information through digital or electronic medium. In the ICT, computer networks offer enormous challenges for teaching and learning. The use of information and communication technology (ICT) in schools is now an intrinsic part of students' learning, both inside and outside the classroom. ICT is a diverse set of technological tools and resources used to communicate, and manage information. At present widely used is Information Communication Technology. Available current technology increases students' interaction with the interactive screen rather than with the teacher alone. Students are able to communicate with the teacher on the concept and can discuss assignments/projects involved. ICT tools include almost every electronic tool that helps in this broad objective of disseminating information. These include televisions, radios, desktops, laptops, mobile phones, the Internet, and other peripherals like CDs, DVDs, smart cards and other digital storage devices. Multimedia is a term commonly heard among educational setup. Multimedia are compulsory for an education in many ways for developing thinking, effective communication, solving questions, curiosity and interest. The study was conducted in government and private schools of Lucknow city. A total of 150 respondents (students and teachers of secondary education schools) were selected for the study. Random sampling method was used for sample selection and questionnaire schedule was used for data collection. F test and t test used in research for data analysis. The results showed significances differences in use of ICTs as an educational tool in secondary education schools.

Keywords: ICT, Multimedia tools, Communication, Secondary education, Learning.

INTRODUCTION

At present information and communication, technologies (ICT) have become a recurring theme in the development of society. ICT used as a general to specific equipment in the schools. "Education is the most powerful weapon which you can use to change the world" (Nelson Mandela). Through to education people able to know all around the world at a place. The use of information and communication technology (ICT) in schools is now an intrinsic part of students' learning, both inside and outside the classroom. It provided a multitude of possibilities, for not only teaching and learning, for managerial and administrative tasks, for communication, for entertainment. We can see ICT as creating opportunities, increasing the efficiency and flexibility of the learning process and of academic work. ICT not only used as educational tools but also as supporting ones. Now days there are wide range of online communities targeted to children, families and teachers that offer different services as discussion forms, search engines, educational resources etc. However, there is integrated environment where different devices can be used together. Most of the electronic devices being used are suitable to classroom settings. **(Mohanty & et al., 2011)** ICT as a critical tool for preparing and educating students with the require skills for the global work place. **(Ibe-Bassey, 2011)** ICT is a diverse set of technological tools and resources used to communicate, and manage information. **(Adomi & Kpangban, 2010)** Use of ICT in education contributes to a more constructivist learning and an increase in activity and greater responsibility of students. **(Volman, 2005)** Used ICT as an object for study, an aspect of a discipline or a profession, and a medium of instruction in education. **(Voogt's, 2003)** ICT (particularly the computer and internet) to increase student involvement in learning. **(Kozma, 2005)** ICT have revolutionized the way people work today and are now transforming education systems. **(Watson, 2001)**

It is believed that Stevenson has submitted an report in 1997 n which he used term ICT first time. He explained about ICT in the context of education as the study of the technology used to handle information and aid communication. The Information Communication Technology conceptually divided in following:

Historically ICT used as classroom method, form of radio, television and satellite broadcasting. Professionals taught students by 'paper and pencil' method. In this, classrooms set in traditional manner like blackboard, chalk and duster.

After that, teachers used wireless and calculators techniques. Mathematician used calculators in mathematics instruction.

Then Information Technology (IT) used widely to do various work. Many type of software developed in education field.

Presently used is Information Communication Technology encourages for students' learning with the interactive screen. It makes students more capable for interactive studying. By ICTs, students can take classes "online" as well as outside.

Information and Communication Technologies defined as all devices, tools, content, resources, forums, and services, digital and those that can be converted into or delivered through digital forms, which can be deployed for realizing the goals of teaching learning, enhancing access to and reach of resources, building of capacities, as well as management of the educational system. **(National Policy on Information and Communication Technology (ICTs) in school education, MHRD, 2012)**

The word ICT includes information, communication and technology.

Information
Initial 'I' information, which is root of the technology. Information includes management of information; control of information; legal aspect. Verification, capturation, storage manipulation processing and distribution of content come in information**. (Desig, 2009)**

Communication
The 'C' initial of ICT present to the communication between electronic sources. Communication achieved by sending and receiving equipment, wires and satellite software applications and data. This process done by networks. External Networks- when need to communicate with other outside with internal network; in this case need to be part of a Wide Area Network (WAN). The internet is the ultimate WAN – it is a vast network of networks. Internal Networks- Local Area Network (LAN) involves linking with hardware equipments together at the pace.

Technology
In ICT 'T' covers technology provision of information and communication done through different electronic devices. Making, modification, usage, and knowledge of tools, machines, techniques, crafts, systems, and methods of organization, in order to solve a problem, improve a pre-existing solution to a problem, achieve a goal, handle an applied input/output relation or perform a specific function comes under technology. **(Jyotinarayana patra, 2014).**

ICT is a collection of different forms of computer and communications devices as well as the software used to manipulate, modification, create, store, transmit, receive, interpret, information in its various formats. ICT allow exchange of data and information through digital or electronic medium. **(Braak, 2000)** ICT provide to support powerful for learning environments. **(Smeets, 2004)** ICT is a "meta technology" characterized by pervasive effects on the economy as a whole, and on areas for scientific and technological advancement. ICT a tool and tools do not substitute for genuine development. ICT however, after tools that may accelerate development **(Chandra, 2003)**.

ICT can be defined as "any object which allows us to get information to communicate with each other or to have an effect on the environment using electronic or digital equipment". **(Singh & Mishra, 2016)**

ICT Software use in secondary school education

The eduSTAR software

The eduSTAR software used for image provides educational software that adds value to teaching and learning. Educationist can search the online software by learning area. In this software, professionals and students get core image, which contains over 80 pieces of software including the Microsoft Office Suite, software for video, image and music creation, thinking skills, literacy, mathematics and science. Along with it contains additional licensed software including the Adobe Pepe Suite, Inspiration, and Mathematics and removes programs that are not compatible with tablet devices.

The broad range of applications cover multimedia elements, music creation, game making and 3-D modeling, plus literacy, mathematics, science software and more.

FUSE

FUSE (Find, Use, Share, and Education) provides access to relevant, online educational resources from around the world. Students and teachers can search for websites, images, audio, video, and other online resources.

Global2

Global2 provides opportunities for teachers and students to post and comment on blogs, collaborate on wikis, set up discussion forums and embed videos and images. Personal levels of access can be customized for the space.

Virtual conferencing

Through virtual conferencing students and teachers, have access-learning tools connect, interact, share and learn with others outside of their classroom and school.

Microsoft:

It provides professional-level developer and design tools to students and educators.

Digital Deck:

The Digital Deck is a set of cards, which provides a quick overview of the range of digital resources available to schools. Each of the resources has a description, advice for getting started and classroom ideas.

IPads for learning:

IPads used for learning including classroom ideas, practitioner case studies and a list of reviewed education apps.

iTunes U:

In iTunes U educators can:
- Design complete courses with multimedia and other content without publishing them to iTunes U via a link for their students to access on their iPads.

- Establish and maintain their own campus to publish and promote their courses with a large global audience.
- Publish and distribute high quality courses that respect digital copyright and student privacy.

Digital Learning Showcase:
The Digital Learning Showcase is a collection of stories, planning and vision documents, advice on assessment and reporting, curriculum and learning resources. (**Victoria state government, 2015**)

ICT software for teachers of schools:
Teachers Report Assistant:
Teachers Report Assistant collect and download comment banks, which can be used in any word processor.

Hot Potatoes:
Create multiple-choice, short-answer, jumbled-sentence, crossword, matching/ordering and gap-fill exercises. *"Hot Potatoes are not freeware, but it is free of charge for those working for publicly-funded non-profit-making educational institutions, which make their pages available on the web. Other users must pay for a license."*

Easy Test Maker:
Online generator of multiple-choice, matching, fill-in-the-blank, short answer and T/F questions.

Online learning and teaching resources:
A range of online systems, tools and resources are available to support digital learning in schools:

ICT school planning resources will assist schools to plan for the effective use of digital technologies in their everyday practices to prepare students for the demands of an ever-changing world, to achieve powerful learning and teaching, and improve learning, teaching and administration.

ICT professional learning resources provide support to build educators' skills and confidence in using digital learning through structured professional learning, collaborative networks such as personal learning networks (PLN) and through inquiry driven communities of practice.
Safe and responsible use resources support school communities to understand the behaviours and processes that will help them to act in a safe and responsible manner when using digital technologies.

Presentation software:
Presentation software is use to create presentations, quizzes, e-learning packages, information points and many other multimedia products. Most presentation software packages allow

creating multimedia product using a series of slides. Text, images, video, animations, links and sound can be combined on each slide to create a sophisticated final product. The most widely used presentation software is Microsoft PowerPoint but there is other presentation software, such as Impress (part of the Open Office suite).PowerPoint and other visual technologies have become persistent in schools. Adoption of these technologies is perceived as a necessary - or, at the very least, an educationally appropriate, even though systematic examination of their use is relatively recent. **(Reedy, 2008)**

Common features of presentation software:
Slides that can contain any mixture of multimedia elements. Animation effects that allow the various elements on each slide to appear after a certain amount of time or when a presenter presses a button.
- **Slide master** – This allows the style (font, font size, background etc) to be set once and then used throughout the presentation.
- **Transitions** – This is how the presentation software "moves" the display of one slide to another. Transitions usually include dissolving from one slide to the next or the current slide being moved in some way to show the next slide as though it was underneath.
- **Slide notes** – When these are used the presenter will see the current slide and any notes associated with it on his/her display and the audience will see just the slide on another screen or from a projector.

Different types of browser:
Common browsers include:
- Internet Explorer
- Firefox
- Safari
- Opera
- Chrome

Types of ICT learning:
Information Communication Technologies (ICT) refers to digital screen with internet connections used to manage and communicate information for teaching and learning purpose. Various types of learning include in ICT. These are -

E learning:
E learning means learning by electronic medium. E learning includes internet, an intranet (LAN) or extranet (WAN) whether wholly or in part, for course delivery, interaction and/or facilitation. Web-based learning is a subset of E learning and refers to learning using an internet browser such as the model, blackboard or internet explorer.

Blended Learning:
Blended Learning refers to learning models that combines the face-to-face classroom practice with e-learning solutions. For example, a teacher may facilitate student learning in class contact and uses the model (modular object oriented dynamic learning environment).

Active learning:
ICT-enhanced learning mobilizes tools for examination, calculation and analysis of information in order to provide a platform for student inquiry, analysis and construction of new information. The learners therefore, learn as they do and, whenever appropriate work on real-life problems in-depth. Moreover, ICT makes the learning less abstract and more relevant to their life situations. ICT-enhanced learning promotes increased learner engagement.

Collaborative learning:
ICT-supported learning encourages interaction and cooperation among students, teachers, and experts regardless of where they are. Apart from modeling real world interactions, ICT-supported learning provides facilitate out of class learning. Opportunity to work with students from different cultures, thereby helping to enhance learners teaming and communication skills as well as their global awareness. It models learning done throughout the learner's lifetime by expanding the learning pace to include not just peers but also mentors and experts from different fields.

Creative learning:
ICT-supported learning promotes the manipulation of existing information and the creation of real-world products rather than the duplication of received information.

Integrative learning:
ICT-enhanced learning promotes a thematic integrative approach to teaching and learning. This approach eliminates the artificial separation between the different disciplines and between theory and practice, which characterizes the traditional approach.

Evaluative learning:
ICT-enhanced learning is student-directed and diagnostic. Unlike static, text or print-based education, ICT-enhanced learning recognizes the presence of different learning pathways to explore and discover rather than merely listen and remember.

Constructivism:
Constructivism is a paradigm of learning that assumes learning as a process individuals ''construct'' meaning or new knowledge based on their prior knowledge and experience **(Johassen, 1991)**. Educators also call it the emerging pedagogy in contrast to the long existing behaviourism view of learning.

Learner- centered learning environment:
Learner- centered learning environment a learning environment that pays attention to knowledge, skills, attitudes, and beliefs that learners bring with them to the learning process where its impetus is derived from a paradigm of learning called constructivism. It means students personal engagement to the learning task using the computer and or the internet connection. **(Tinio, 2002)**

Approaches: - There are three main approaches to ICT taken by teachers according to **(UNESCO, 2004)**. These are –

Integrated approach:

In this approach, ICT integrate for planning the use of ICT within the subject to enhance concepts and skills and improve students' attainment. It involves for planning of the curriculum area, selecting the appropriate ICT resource, which will contribute to the aims and objectives of the curriculum and scheme of work, and then integrating that use in relevant lessons.

Enhancement approach:

In this approach used ICT as interactive learning which enhance the learning materials in innovative ways. For example – Using an electronic whiteboard for presenting theory, real situations, etc about a topic.

Complementary approach:

Using an ICT resource to empower the pupils' learning, for example by enabling them to improve their class work by taking notes on the computer, or by sending homework by email to the teacher from home, or word processing their homework.
`

All three approaches used for enhance student's attainment, but the effects may be different. Through the integrated approach, teachers integrated learning materials and tasks interactively for students. The enhancement approach used for improve students' learning through presenting knowledge in new ways, promoting debates among students, and encouraging them to formulate their own explanations. The complementary approach used for reducing the mundane and repetitive aspects of tasks such as writing essays and homework by hand, freeing the learner to focus on more challenging and subject- focused tasks.

Fundamental elements of ICT:

ICT elements include all electronic devices or tools that help in transmission of information. The basic elements of ICT, system include devices such as computers and communications equipment and network used to create, store, retrieve, send and receive information. A **computer** can be used to create, store or change information. Communication devices such as **modems, routers, switches and hubs** that are connected to computer systems help to transmit and receive information to and from other computers and ICT systems.

ICT tools in education:

Major elements of multimedia include text, video, sound, graphics, and animation. These all elements used in ICT for secondary level students learning. Multimedia simply combines these elements into a powerful new tool; text has the most impact on the quality of the multimedia interaction. Generally, text provides the important information. Text acts as the keystone tying all of the other media elements together; sound is used to provide emphasis or highlight a transition from one page to another. Sound synchronized to screen display, enables teachers to present lots of information at once. Sound used creatively, becomes a

stimulus to the imagination; used inappropriately it becomes a hindrance or an annoyance; video represent information by using the visualization capabilities .While this is not in doubt, it is the ability to choose how we view, and interact, with the content of digital video that provides new and exciting possibilities for the use of digital video in education. **(Singh & Mishra, 2013)**

Multimedia has important characteristics that make it different from the other forms of media—it is *digital and interactive*. Digital multimedia is a combination of media (text, pictures, audio and video) that is represented all study material digitally. In interactive, it combines multiple disciplines for the development of multimedia systems that are capable to sense the environment and dynamically process, edit, adjust or generate new content. **(Singh & Mishra, 2016)**

Communication devices simply allow computers and various ICT systems to be connected to one another. They facilitate the transmission and receiving of information and data over the transmission media that link them to each other. Examples of transmission media are:

- Cables (copper or fiber)
- Telephone Lines
- Cellular or Mobile Links (through open space, wireless)
- Satellite Links(though open space)
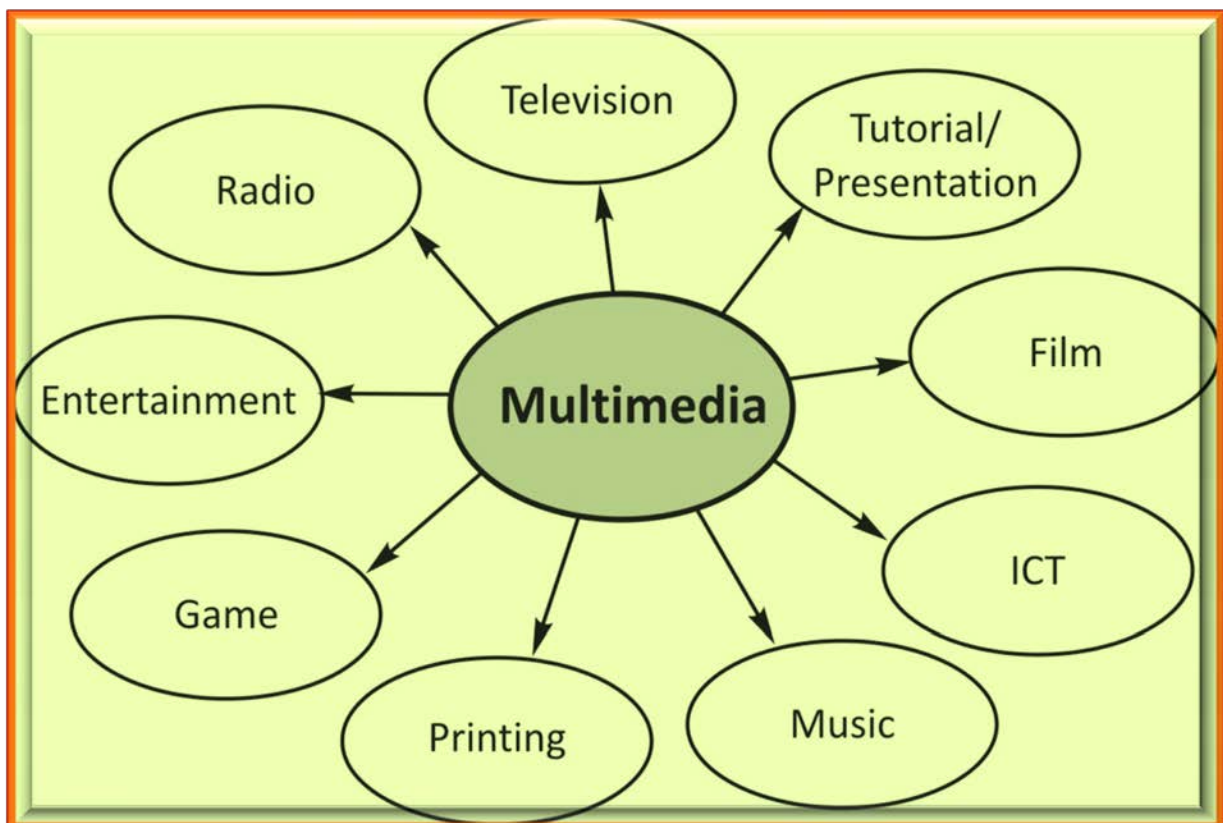
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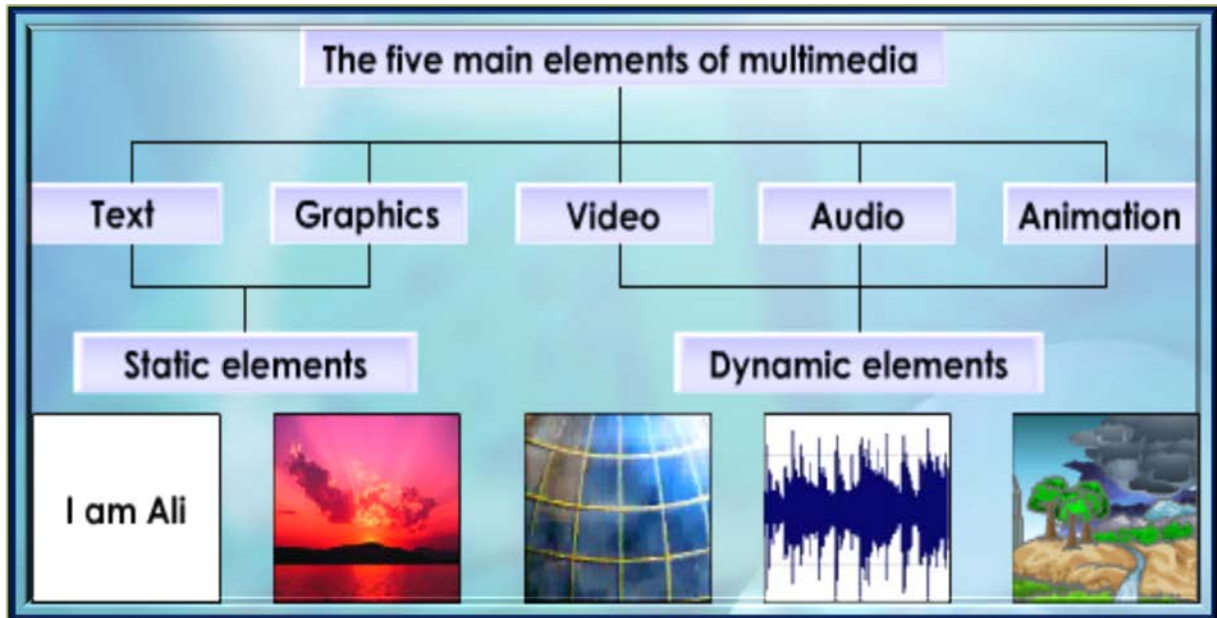
MULTIMEDIA ELEMENTS

Human communication has progressed through four distinct phases. A fifth now is beginning. Each phase is associates with a specific form of communication. During the first four phases, or stages, humanity proceeded from speaking to writing and then to printing and telecommunication. In the fifth phase, which now is taking shape, the emphasis will be on interactive communication systems. Communication devices and the infrastructure or transmission media that link them together constitute Communication Networks.

Communication Network:

A communications network made up of connected communications devices and the transmission media that link them together. There are various forms of communication networks:

Local Area Networks:

In a local area network, data is transmitted between PCs, servers, networked printers, and other hardware all found in a single location.

Wide Area Networks:

Wide area networks use telecommunications data lines or satellite signals to connect each other, single computers, or entire local area networks at multiple geographical locations.

The Internet:

The Internet, sometimes called simply "the Net," is a worldwide system of computer networks - a network of networks in which users at any one computer can, if they have permission, get information from any other computer (and sometimes talk directly to users at other computers).

Satellite Links:

In satellite communication, signal transferring between the sender and receiver done with the help of satellite. In this process, the signal which is basically a beam of modulated microwaves is sent towards the satellite. Then the satellite amplifies the signal and sent it back to the receiver's antenna present on the earth's surface. Therefore, all the signal transferring is happening in space. Thus, this type of communication is known as space communication.

Telephone Networks:

The network of structures and equipment used in telephone communication. A network comprises switching points, central offices, communications lines, and telephone sets. Telephone sets are equipped with rotary dials & automatic dialers. The communication lines used in telephone network stake the form of aerial wires and cables, underground wires and cables, submarine cables, radio relay systems, optical (laser) systems, and satellite links. In order to use these lines most efficiently, multiplexing equipment (see LINE MULTIPLEXING) is used to create a certain number of standard voice-frequency (300-3400hertz) communications channels. The switching operations necessary in setting up telephone connections are carried out at central offices and at switching points.
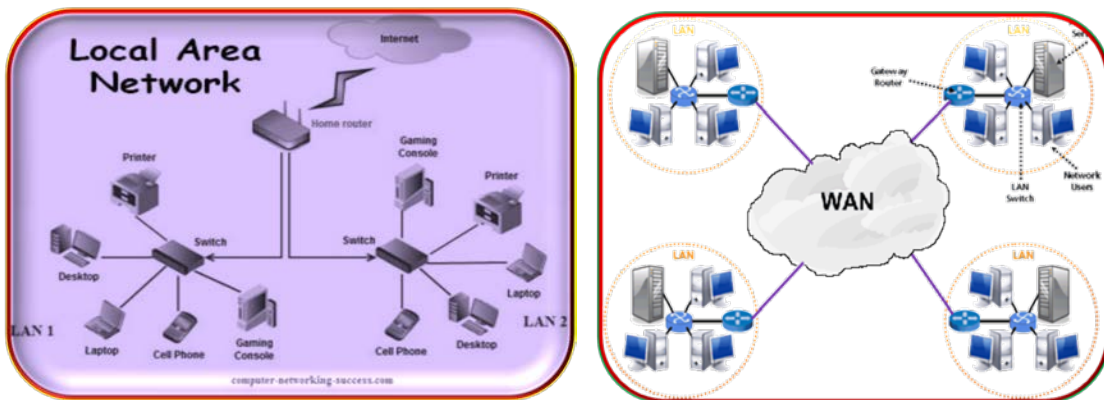
LOCAL AREA NETWORKS   WIDE AREA NETWORKS
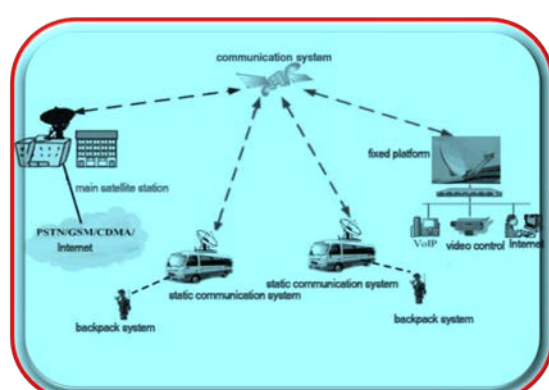
THE INTERNET   SATELLITE LINKS
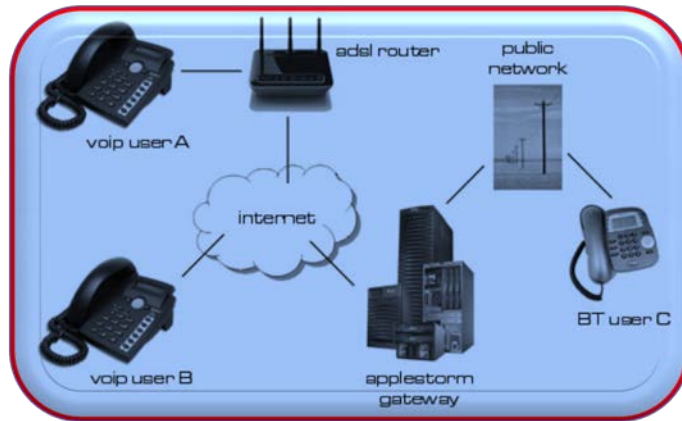
TELEPHONE NETWORKS
COMMUNICATIONS NETWORK IN ICT

Secondary education:

The Information and Communication Technology (ICT) in Schools was launched in December 2004 and revised in 2010 to provide opportunities to secondary stage students to mainly build their capacity on ICT skills and make them learn through computer aided learning process. Education in Education system includes formal and Non- formal forms of education at various levels of education. India is provided by the public sector as well as the private sector, with control and funding coming from three levels: central, state, and local. Secondary Education is a crucial stage in the educational hierarchy as it prepares the students for higher education and also the world of work**" (Ministry of Human Resource Development (MHRD), India)**. The Ministry of Human Resource Development (MHRD) ascribes the importance of secondary education and considers the stepping-stone for the youth towards employability, leading to the larger economic and social development of the country. Recent economic studies have shown that secondary education is critical to breaking intergenerational transmission of poverty. At the secondary education level, the gross enrolment ratio for male population is 20.8 while that for female it is 17.9 respectively.

The secondary stage consists of grades 9 – 12 (ages 14-17). India has more than one hundred thousand secondary schools. **(NCEE, 2005)**

Secondary Stage of education covering 2-3 years of academic study starts with **classes 8th-10th.**Consisting of students aged between 14-16 years. The schools which impart education up till 10th class are known as Secondary Schools, High Schools, and Senior Schools etc. **(Maxus Education)**

Secondary education covers children aged 12 to 18, a group comprising 88.5 million children according to the 2001 Census of India. The final two years of secondary is often called Higher Secondary (HS), Senior Secondary, or simply the "+2" stage.

The Secondary level education is like a bridge between elementary and higher education. It prepares young students between the age group of 14 and 18 for entry into higher education. **(V.A.Ponmelil)**

Secondary school education comprises of two years of lower secondary and two years of higher secondary education. The lower secondary level is for students aged 14 to 16years. Admission requirement is the completion of upper primary school education. Instruction is more organized along specific subjects. **(Parruck, 2014)**

Rationale for Secondary Education:
- Develops faculties of critical thinking, abstraction,   insight, skills and competence at a higher level
- Foundation for higher education
- Requirement for employment and labour market quality
- Critical to social and economic development and growth
- Rates of return on secondary education are high
- Rising demand from elementary leavers
- International competitiveness
- Gender equity
- Poverty reduction and equity

Importance of Information Communication Technology in secondary education:
Information Communication Technology increasingly used. It is play a major role in student's activities in everyday. ICT in education have a positive impact on the learning environment. ICT improve the learning process through the provision of more interactive educational materials that increase learner motivation and facilitate the easy acquisition of basic skills. ICT have demonstrated potential to increase the options, access, participation, and achievement for all students. The potentials of information and communication technology (ICT) to facilitate students' learning, improve teaching and enhance institutional administration had established in literature.

Promoting students intellectual qualities through higher order thinking, problem solving, improved communication skills and deep understanding of the learning tools and concepts to be taught.
- Promoting supportive, interactive teaching and learning environment by creating broader learning communication and therefore provide learning tools for students especially those with special needs.
- Using computer generated graphics to illustrate relationships of all kinds especially dynamics processes that cannot be illustrated by individual pictures.
- Improving school attendance levels and enabling the creation of a new and more effective curriculum.
- Ensuring that more effective interactive learning environment is created through the use of a learner centered and activity oriented teaching/learning approach

- Emerging the students.
- Encouraging deeper understanding about data collection saves time on measuring and recording analysis. Empowering learners with ICT awareness and skills, which are essential for success in contemporary knowledge economy.
- Improving the quality of instruction.
- Transforming the school by improving school management.
- Enhancing the tools and environment for learning because materials can be presented by using multimedia.
- Increasing the quality of student learning through the access to the content through ICT facilities.
- Encouraging collaborative learning.

Role of Information Communication Technology in secondary education:
The roles of ICT in secondary education as;

ICT enhancing teaching and learning process:
ICT have strength to motivate and engage students, to help relate school experience to work practices, create economic viability and emphasized content. ICT make curricula that promote competency and performance. The integration of information and communication technologies can help revitalize teachers and students. Information and communication technologies help to improve and develop the quality of education by providing curricular support in difficult subject areas. ICT by their very nature are tools that encourage and support independent learning. Teachers generate meaningful and engaging learning experiences for their students, strategically using ICT to enhance learning. Students enjoy learning, and the independent enquiry which innovative and appropriate use of ICT can foster. Information and communication technology as tools within the school environment include use for school administration and management, teaching and learning of ICT related skills for enhancing the presentation of classroom work, teaching/learning repetitive tasks, teaching/learning intellectual, thinking and problem solving skills, stimulating creativity and imagination; for research by teachers and students, and as communication tool by teachers and students. **(Collis &Moonen, 2001)**

ICT enhancing the quality and accessibility of education:
ICT increase the flexibility of delivery of education so that learners can access knowledge anytime and from anywhere. One of the most vital contributions of ICT in the field of education is-Easy Access to Learning. With the help of ICT, students can now browse through e-books, sample examination papers, previous year papers etc. and can also have an easy access to resource persons, mentors, experts, researchers, professionals, and peers-all over the world. In India, effective use of ICT for the purpose of education has the potential to bridge the digital divide. It also improves the quality of education by facilitating learning by doing, real time conversation, delayed time conversation, directed instruction, self-learning, problem solving, information seeking and analysis, and critical thinking, as well as the ability to communicate, collaborate and learn. **(Yuen et al, 2003)**

ICT enhancing learning Environment:
ICT is changing processes of teaching and learning by adding elements of vitality to learning environments including virtual environments for the purpose. ICT are a potentially powerful tool for offering educational opportunities. It is difficult and maybe even impossible to imagine future learning environments that are not supported, in one way or another, by Information and Communication Technologies (ICT). ICT may also make complex processes easier to understand through simulations that, again, contribute to authentic learning environments. The ICT environment has been developed by using different software and the extended experience in developing web based and multimedia materials. ICT have an important role to play in changing and modernizing educational systems and ways of learning.

ICT enhancing learning motivation:
ICT can enhance the quality of education in several ways, by increasing learner motivation and engagement, by facilitating the acquisition of basic skills, and by enhancing teacher training. ICT provides-motivation to learn. ICT such as videos, television and multimedia computer software that combine text, sound, and colourful moving images can be used to provide challenging and authentic content that will engage the student in the learning process. Interactive radio likewise makes use of sound effects, songs, dramatizations, comic skits, and other performance conventions to compel the students to listen and become more involved in the lessons being delivered. Parents of the respondents opined that their children were feeling more motivated than before in such type of teaching in the classroom rather than the stereotype 45 minutes lecture. They were of the view that this type of learning process is much more effective than the monotonous monologue classroom situation where the teacher just lectures from a raised platform and the students just listen to the teacher. ICT-enhanced learning is student-directed and diagnostic. Unlike static, text- or print-based educational technologies, ICT-enhanced learning recognizes that there are many different learning pathways and many different articulations of knowledge. ICT allow learners to explore and discover rather than merely listen and remember.ICT to enhance and extend learning in their subject areas. **(Tearle, 2003)**

ICT enhancing the scholastic performance:
The analysis of the effects of the methodological and technological innovations on the students' attitude towards the learning process and on students' performance seem to be evolving towards a consensus, according to which an appropriate use of digital technologies in education can have significant positive effects both on students' attitude and their achievement. The use of ICT in educational settings, by itself acts as a catalyst for change in this domain. Students using ICT for learning purposes become immersed in the process of learning. Computer networks offer enormous challenges for teaching and learning. **(Braak, 2000)**

Negative impact of ICT in teaching and learning process of secondary school education:
Lack of confidence leads to reluctance to use computers by the teachers.**(Kumar & Kumar, 2003)** Teachers need training not more adept at information skills or more informed than only

in computer literacy but also in the application of their less information-rich predecessors: "What is various kinds of educational software in teaching and growing ever more obvious is that today's learning. **(Ololube, 2006)** Female teachers tend to be less interested in computer and use them less often in their spare time. **(Schaumburg, 2001)** There is a general lack of awareness about the utility of ICT in education, as well as about the ICT at our disposal and how they can be accessed and utilized economically and effectively. This lack of awareness and knowledge about ICT and their use in education, even on the part of policy makers, administrators and educators, makes it particularly difficult to deploy ICT in the field of school education.

Another critical issue with the usage of ICT in schools is the implementation of new technologies without having analyzed their appropriateness, applicability and impact on various environments and contexts. In most countries, particularly the least developed ones, they must learn from the experiences of others, but must also use technology to respond to their own needs and not just follow trends.**(Swarts, 2010)**

Objectives
1. To asses different types of ICT and their positive influence in secondary school education students.
2. To asses effects of ICT on academic motivation in secondary school education students.
3. To acquainted secondary school education students about ICT for their concept formation in various subject.
4. To identify the impact of ICT in secondary school education students in government and private schools.
5. To determine the knowledge of ICT among teachers of secondary school education.

Rationale of Study
The purpose of the study is known about the use of ICT as an educational tool in secondary education for learning and teaching & different types of ICT use in education to engage, encourage and enhancement the secondary education students. Also study about the positive influence & effectiveness of ICT in secondary education students develops content thinking, sharing of experiences and experimental learning. Along with also assess acquainted secondary education students about ICT for formation of concept and decision-making. Also, know about impact of ICT in secondary education like dependency, confusions and affects personality. Determine the Knowledge of ICT among teachers of secondary education to motivate for learn and have increased self-confidence and self-esteem. ICT plays major role in secondary education for enhance continuous innovation, opportunities and spontaneous learning.

Limitations of the Study
- In this study, information was collected on self-administered questionnaire. We cannot rule out information bias.
- The present study is limited to a sample of 150 respondents.

- In these study only urban areas taken, that is by not allowed in rural areas.

Hypotheses

Based on the review of relevant literature design and objectives of the study of the following hypotheses were formulated for testing-

H_o No significant differences exist in different types of ICT and their positive influence in secondary education students.

H_1 No significant differences exist in effects of ICT on academic motivation in secondary education students.

H_2 No significant differences viewed in acquainted secondary education students about ICT for their concept formation in various subject.

H_3 No significant differences showed in impact of ICT in secondary education students in government and private schools.

H_4 No significant differences exist in knowledge of ICT among teachers of secondary education.

REVIEW OF LITERATURE

A literature review is an objective, critical summary of published research literature relevant to a topic under consideration for research. Its purpose is to create familiarity with current thinking and research on a particular topic, and may justify future research into a previously overlooked or understudied area.

Singh & Mishra. (2016) found that ICT tools include almost every electronic tool that helps in this broad objective of disseminating information. These include televisions, radios, desktops, laptops, mobile phones, the Internet, and other peripherals like CDs, DVDs, smart cards and other digital storage devices. Multimedia is a term commonly heard among educational setup. Multimedia are compulsory for an education in many ways for developing thinking, effective communication, solving questions, curiosity and interest.

Patra. (2014) found that ICT plays are mark able   role in school education. ICT in schools provide lots of opportunities to teachers to transform their practices by providing the learners with improved educational content and more effective teaching and learning methods. ICT improves the learning process through the provision of more interactive educational materials that increase learner's motivation and facilitate the easy acquisition of basic skills. In Primary   and Secondary level the use of various multimedia devices such as computer application, OHP, videos, television etc. Offer more challenging and engaging learning environment for students. In twenty first century, teaching learning skills underscore the need to shift from traditional teacher centered pedagogy to more learner-centered method.

Abdullahi. (2014) revealed that use of ICT in education is to promote students intellectual qualities through higher order of thinking, problem solving, improved communication skis and deep understanding of learning tool and concept to be taught.

IICD (2014) found that with the appropriate combination of ICT in schools and classrooms and with training and capacity building, these technologies can enhance quality of teaching and students' abilities to engage with the digital technologies that have become ubiquitous in modern society.

Bandyopadhyay (2013) found that ICT provide a quality base knowledge to marginalized students. ICT tools can create powerful learning environments and knowledge creation and understanding. ICT compress distance and allow teachers and educators to share best practices with each other. Through, ICT students have option to interact with not only peers in class but also counterparts across the world and motivate for co – operative learning. Along with lack, the skills and ability to integrate teachers not provide correct knowledge.

Devi & et al.(2012) found that in student centered learning focus is on the student's needs, abilities, interests, and learning styles with the teacher as a facilitator of learning. Here students have to be active responsible participants in learning process. ICT can be made effective and easier for improving the quality of both formal and non-formal

forms of education. At high school level subjects like History, Geography, Political science, Physics, Chemistry, Biology, Physical education etc are taught. Lessons in these subjects can easily be taught by showing small movie related with the subject to create interest among the students. Such type of movies and related multimedia material is easily available at academic repositories and from various related sites with the help of Internet. Internet is basic tool which can be utilized by teachers and students to find any information on any topic. This type teaching –learning makes the environment very interactive and is liked by students.

Zuppo.(2012) found that ICT within the context of education encompasses not only a reference to equipment (i.e. devices) but also to a group of skills or competencies that teachers and students must possess in order to be considered having achieved a certain level of competencies as it relates to ICT.

MHRD.(2012) found that use different software applications to enhance ones own learning – database applications, analysis of data and problem solving, computing, design, graphical and audio-visual communication; undertake research and carry out projects using web resources; use ICT for documentation and presentation; create and participate in web based networks for cooperative and collaborative learning; become aware of issues of cyber security, copyright and safe use of ICT and take necessary steps to protect oneself and ICT resources.

Gamboa & Suaza. (2011) revealed computers provide correct knowledge in interactive ways. Videos are mostly based on real situation that's by children's interacting easily. Animation are deeply affected the mind of children's and increased their academic performances. The presentations through slide projectors increase children's attention. Use of computers by students in the school could have a positive effect of future productivity levels. Excessive use of computers could have a negative effect on aspects such as creativity or the ability of work-in-group. Capabilities developed by students in these subjects are related to the use of modern technologies such as computers, Internet, academic software. ICT are complementary inputs into educational outcome, and ICT could help to learn faster (by increasing specific abilities and capturing their interest).Computer use at home and at school and finds a positive effect of ICT use on academic achievement for both cases. Positive externalities coming from computers.

Mikre. (2011) found that Information communication technologies are influencing all aspects of life including education. They are promoting changes in working conditions, handling and exchanging of information, teaching-learning approaches and so on. ICT are making major differences in the teaching approaches and the ways students are learning. ICT-enhanced learning environment facilitates active, collaborative, creative, integrative, and evaluative learning as an advantage over the traditional method.

Nishar & et al. (2011) found that ICT is very essential to improve the educational efficiency of students. This indicates that availability of ICT in Education is supportive for the students to improve their learning skills, as well as latest technologies of ICT are helpful for the

students to better prepare their assignments and projects. ICT can helpful to produce the productive knowledge of students related to their studies. Our findings suggest that more the availability and usage of ICT in education sector will increase then as a result, more the efficiency of students will increase. ICT provides vast knowledge to students through internet and digital libraries.

Yusuf & et al. (2011) found that the use of information and communication technology as a tool for enhancing students' learning, teachers' instruction, and as catalyst for improving access to quality education in formal and non-formal settings has become a necessity.

Rindharwan & Khamrang. (2011) found that ICT has the potential to enhance the quality of teaching learning process. Teaching and learning in ICT setting changed the role of teacher from transmitter to facilitator. It increases motivational level and basic skills, learning become easy to comprehend and grasp and active, engaging, creative, self – paced and evaluative. ICT save more time for discussion later on.

Senapati. (2011) found that ICT is presently often embedded in their everyday experiences, for ex: Interactive Television Programmes, video/DVD players. ICT resources are often highly motivating, inclusive and often involve language and social skills.

Price water house cooper. (2010) found that ICT in education have a positive impact on the learning environment. It is help in promoting learning, along with exposing students to the technical skills required for many occupations. ICT improve the learning process through the provision of more interactive educational materials that increase learner motivation and facilitate the easy acquisition of basic skills. The use of various multimedia devices such as television, videos, and computer applications offers more challenging and engaging learning environment for students of all ages.

Meiers. (2009) found that interactive whiteboards are a relatively recent technological innovation in schools.ICT being used by students to write essays, find information for projects and assignments, compose music; share ideas. Students' use of ICT simulations helped them to improve their understanding of science ideas more effectively.

Khalkhali. (2008) found that ICT provide opportunities for teachers and students to communicate with one another more effectively during formal and informal teaching and learning. ICT are tools that on the one hand can facilitate teachers training and on the other hand help them to take full advantage of the potential of technology to enhance student learning. ICT have introduced a new era in traditional methods of teaching and offering new teaching and learning experiences to both teachers and students.

Saith & et al. (2008) found that the use of ICT in providing education, increasing literacy. The economics of scope and scale attainable with ICT tools would make education accessible and more affordable.

Dix. (2007) found that the use of information and communication technologies (ICT) in school has become an intrinsic part of students' learning, both inside and outside the classroom. ICT can promote significant changes in teaching practices and can have benefits for students, particularly those considered at-risk, in their attitudinal development. ICT promote inclusive and supportive learning environment. Teacher training needs to recognize the different needs of secondary school teachers when developing their ICT skills and confidence. ICT-rich learning environment benefits those students considered to be at-risk with negative attitudes towards school and low self-esteem. It also appears to be beneficial to girls, by potentially reducing the gender gap in which male students have traditionally maintained higher self-esteem.

Moursund. (2005) found that ICT provides a wide range of aids to solving problems and accomplishing tasks. ICT is a dynamic field, growing rapidly in breadth and depth. ICT as a mind tool, it is evident that ICT incorporates and extends some of the power of reading, writing, and arithmetic. ICT is a powerful change agent in flexibility, make changes in curriculum content, instructional process, assessment, teacher education of formal educational system.

(Kyriakidou & et al., 2000) Successful integration of ICT in the school system depends largely on the competence and on the attitude of teachers towards the role of modern technologies in teaching and learning. Thus, experienced teachers, newly qualified, and student-teachers need to be confident in using ICT effectively in their teaching.

METHODOLOGY

Methodology is a systematic way to solve a problem. It is a science of studying how research is to be carried out. Essentially, the procedures by which researchers go about their work of describing, explaining and predicting phenomena are called research methodology. It is also defined as the study of methods by which knowledge is gained. Its aim is to give the work plan of research.

The present study was undertaken to study the **"A study about use of Information Communication Technology as an educational tool in secondary school education"**. The methodology followed during the course of investigation discussed in this chapter under the following section.

1. Research design
2. Locale of the study
3. Sample procedure
4. Variables of the study
5. Operational definition
6. Tools & techniques used
7. Methods of data collection
8. Data analysis

Research Design:

The research design is the structure of any scientific work. It gives direction and systematizes the research. A research design is a set of logical procedures that (when followed) enables one to obtain evidence to determine the degree to which a theoretical hypothesis (or set of hypotheses) is/are correct. The Research design followed in the present study in cross sectional design. Cross-sectional research design is used to examine one variable in different groups that are similar in all other characteristics.

Locale of the study:

The study was conducted in urban areas of Lucknow city of Uttar Pradesh, as it is convenient for the researcher to conduct the study.

The sample size:

The sample size was 150.

Determination of sample:

Student is who aged between 14-18 years and studied in secondary education and teachers who are currently teaching ICTs in secondary education schools.

Sampling procedure:

Simple random sampling was followed in the present research to arrive at the required sample size.
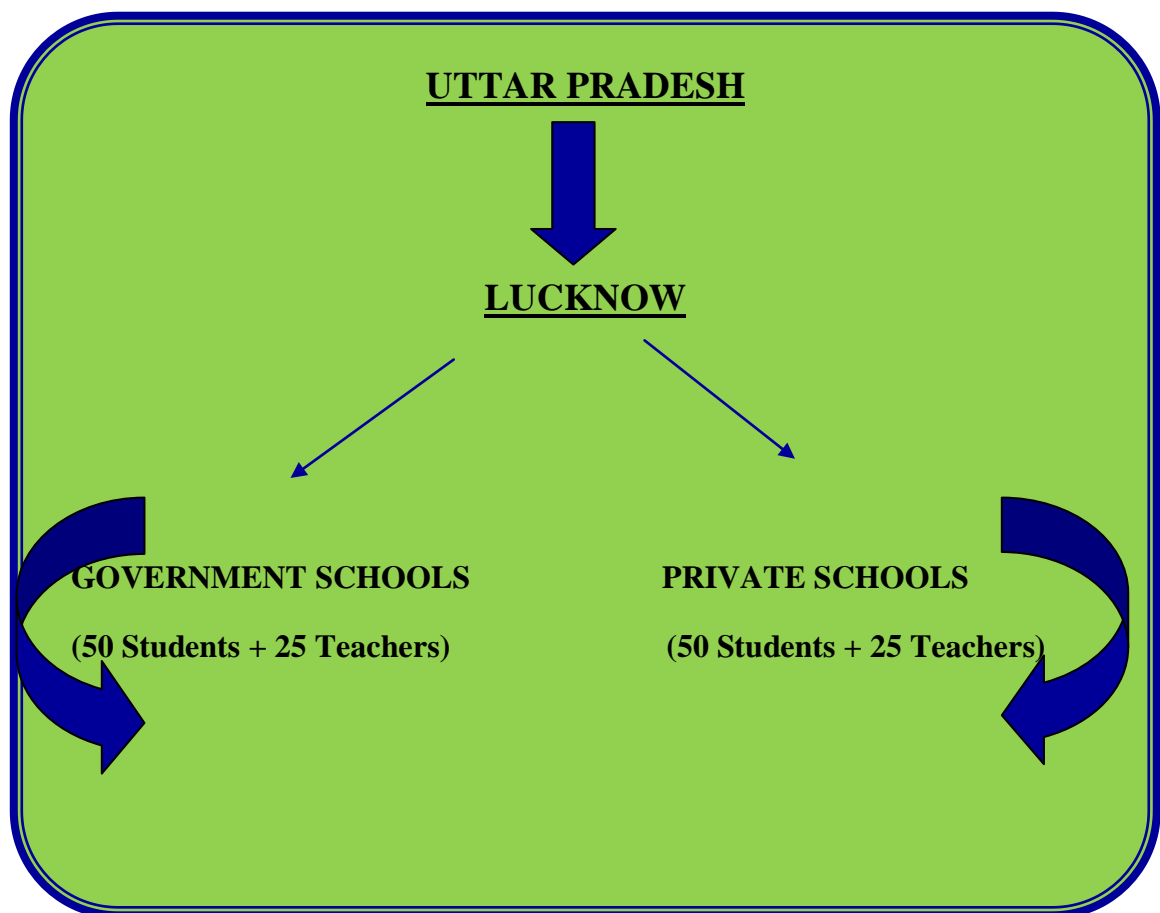
Variable of the study:

The present study was conducted to study the relationship between the independent and dependent variables.

Independent variable:

The independent variables are those elements, which are not dependent and controlled. For the present investigation, the following independent variables were taken age, gender, education, marital status, income, type of school, medium of school, subject like most, teaching subject, done any training.

Age	20-25 26 – 30 31- Above	14 – 16 16 - 18
Gender	Male Female	Boy Girl
Education	Graduate Postgraduate Other	
Marital status	Married Unmarried Other	
Income	Below 10,000 10,000-25,000 Above 25,000	
School type	Government Private	
Subject like most	Computers Mathematics Science Others	
Teaching subject	Computers Mathematics Science Others	
Done any training	ICT training course Animation Other	

Dependent variables:
The dependent variable is the factor that is measured to determine the effect of independent variables .In the present study measuring the use of Information Communication Technology as an educational tool in secondary education.

Operational definitions of the terms used in research:
Information Communication Technology:
ICT is the acquisition, processing, storage send discrimination of vocal, pictorial, textual and numerical information by a microelectronics- based combination of computing and telecommunications. It is diverse set of technological tools and resources used to create access, store, transmit and manage information and communicate the desired information from one place to another. It includes computers, broadcasting technologies, digital camera, video recorder, tape recorder, LCD projector, over head projector, cellular phone, 2G & 3G technologies, DTH – TV, educational satellite, CD – ROM, DVD, computer software etc. It include various services like internet, cloud computing, teleconferencing, video conferencing, fax, PowerPoint presentation, E- learning, mobile learning (any time anywhere), balanced learning, distance learning etc.

Secondary Education:
Secondary education is a period of foundation of higher-level education. It is a stage when students make own thoughts about future learning and make a strong scientific base.

Use of ICTs in secondary education:
The usage of ICT in secondary education increases level of literacy, easily accessible and affordable as well as providing technical training to the students. ICT make information authentic and symmetrical. ICT promotes communication skills, makes education interactive and improved presentations at secondary level. The use of ICT tools such as e- mail, fax, computers, and video conferencing have made it possible to overcomes barriers of space and time and opens new possibilities for learning.

Tools and techniques used:
Self constructed questionnaire which is analyze by various educational repute. The data was collected from teachers who teaching in Secondary education and students who fulfilled the criteria of secondary level education by questionnaire schedule.

Method of data collection:
Data collection was done by using pretested questionnaire using random sampling method.

Analysis of data:
The data will be tabulated, coded and decoded. Descriptive and relational statistics tool will be used to analyze the data and to study the relationship the between dependent and independent variables. SPSS statistical software (version 20) was used to analyze descriptive and relational statistics.

Data collection from different secondary schools

Data collection from different secondary schools.
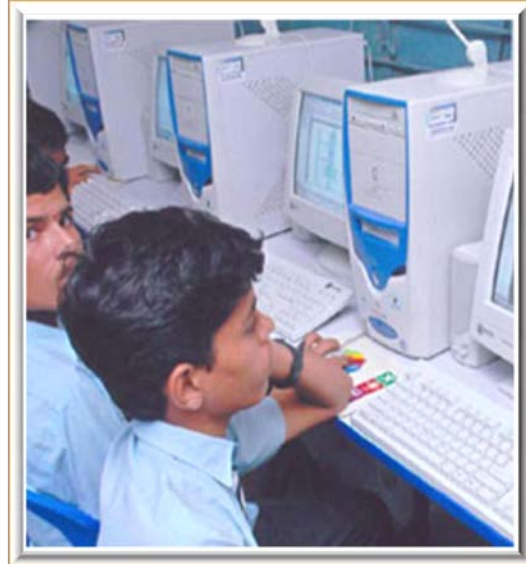
Data collection from different secondary schools.

RESULTS AND DISCUSSION

This chapter deals with the analysis and interpretation of the gathered information from the target population to assess the **'A study about use of Information Communication Technology as an educational tool in secondary school education'.**

Analysis is the process of organizing and synthesizing the data in such a way that the answers to research questions can be obtained. The results were drowned out using descriptive and inferential statistics based on following objectives of the study–

1. To asses different types of ICTs and their positive influence in secondary school education students.
2. To asses effects of ICTs on academic motivation in secondary school education students.
3. To acquainted secondary school education students about ICTs for their concept formation in various subject.
4. To identify the impact of ICTs in secondary school education students in government and private schools.
5. To determine the knowledge of ICTs among teachers of secondary school education.

The Analysis of the data was organized and presented under the following headings:
1. Description of Respondents Characteristics.
2. Descriptive Analysis
3. Test Results of Hypothesis.

Description of respondent's characteristics:
The data on respondent's (students and teachers) characteristics were analyzed using descriptive statistics and presented in the form of Frequencies, Percentages and Diagrams. The data obtained from the respondents presented in terms of sex, age, education, marital status, income, type of school, subject like most etc.

General Information:

Table.1 Distribution of Respondents based on age:

S. No.	Student's age		Teacher's age		
1	**14 -16**	**16 -18**	**20 - 25**	**25 -30**	**31- Above**
2	41 (41%)	59 (59%)	18 (36%)	20 (40%)	12 (24%)
3	**Total (N) =100**		**Total (N) =50**		

The above table showed the age of respondents (Students and Teachers). **Majority (59%)** of students respondents belongs to the age group of 16-18 year whereas (41%) are belongs to 14-16year.An average of teacher's respondents belongs to the age group of 20 – 25 year (36%), 25 – 30 year (40%) whereas **minimum (24%)**belongs to 31- above year.
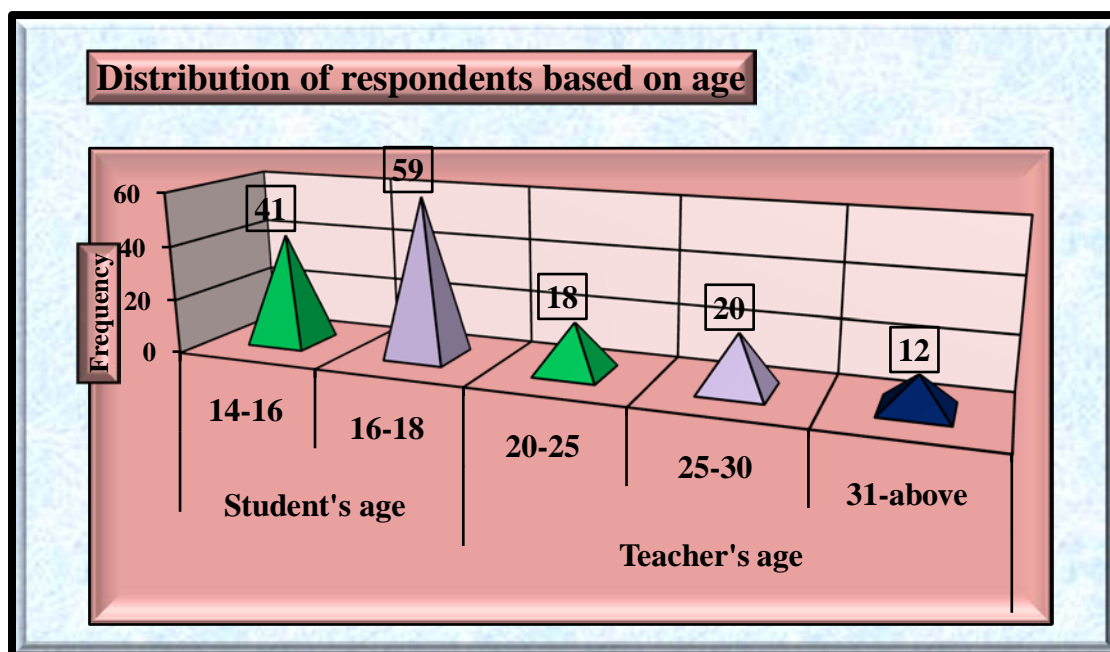
Fig. Distribution of respondents based on age.

Table.2 - Distribution of the Respondents based on gender:

S. No.	Students		Teachers	
1	**Boys**	**Girls**	**Male**	**Female**
2	50 (50%)	50(50%)	25 (50%)	25 (50%)
3	**Total (N) =100**		**Total (N) =50**	

The above table showed the distribution of respondents based on their gender. There are equal participation of gender of boy's (50%) and girls (50%) students and gender of teachers of male (50%) and female (50%).
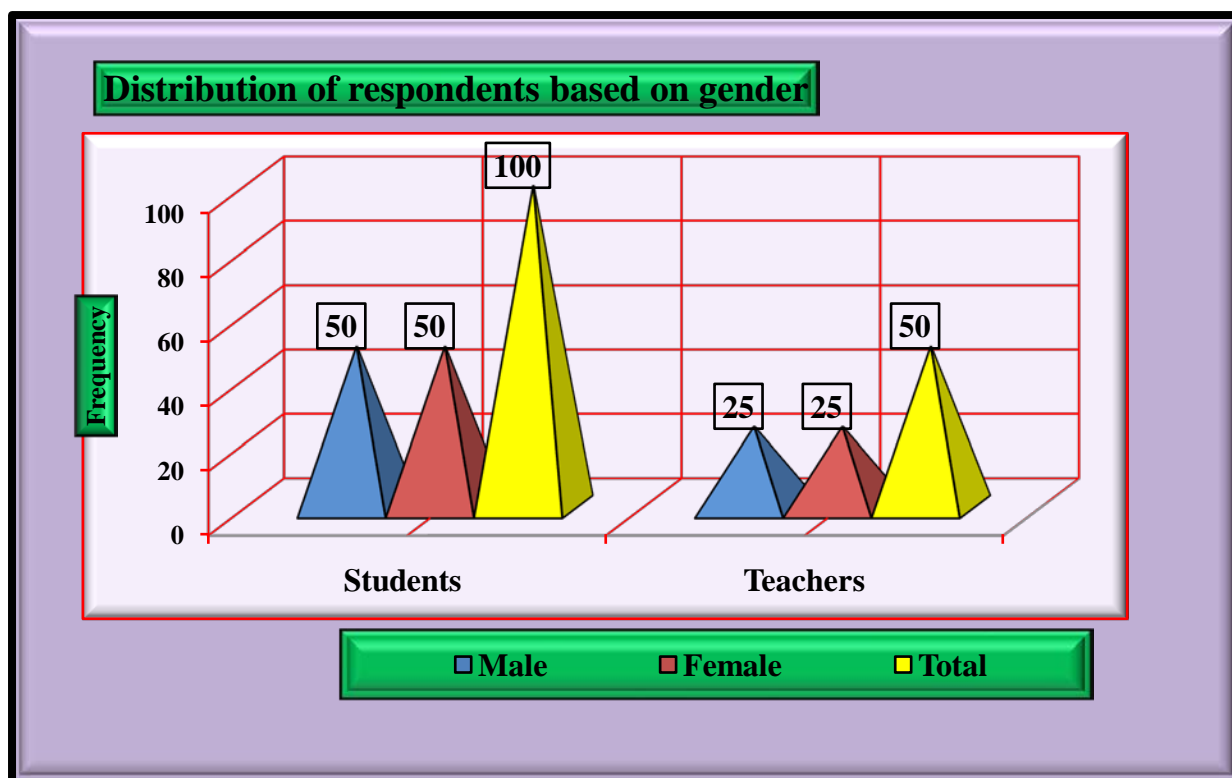
Fig. - Distribution of respondents (students and teachers) based on gender.

Table. 3 - Distribution of Respondents (Students) based on school type:

S.No.	Types of school	Frequency	Percent (%)
1	Government	50	50.0
2	Private	50	50.0
3	**Total (N)**	**100**	**100.0**

The above table showed the distribution of respondents (students) based on their school. There are equal respondents (50%) government and (50%) private.
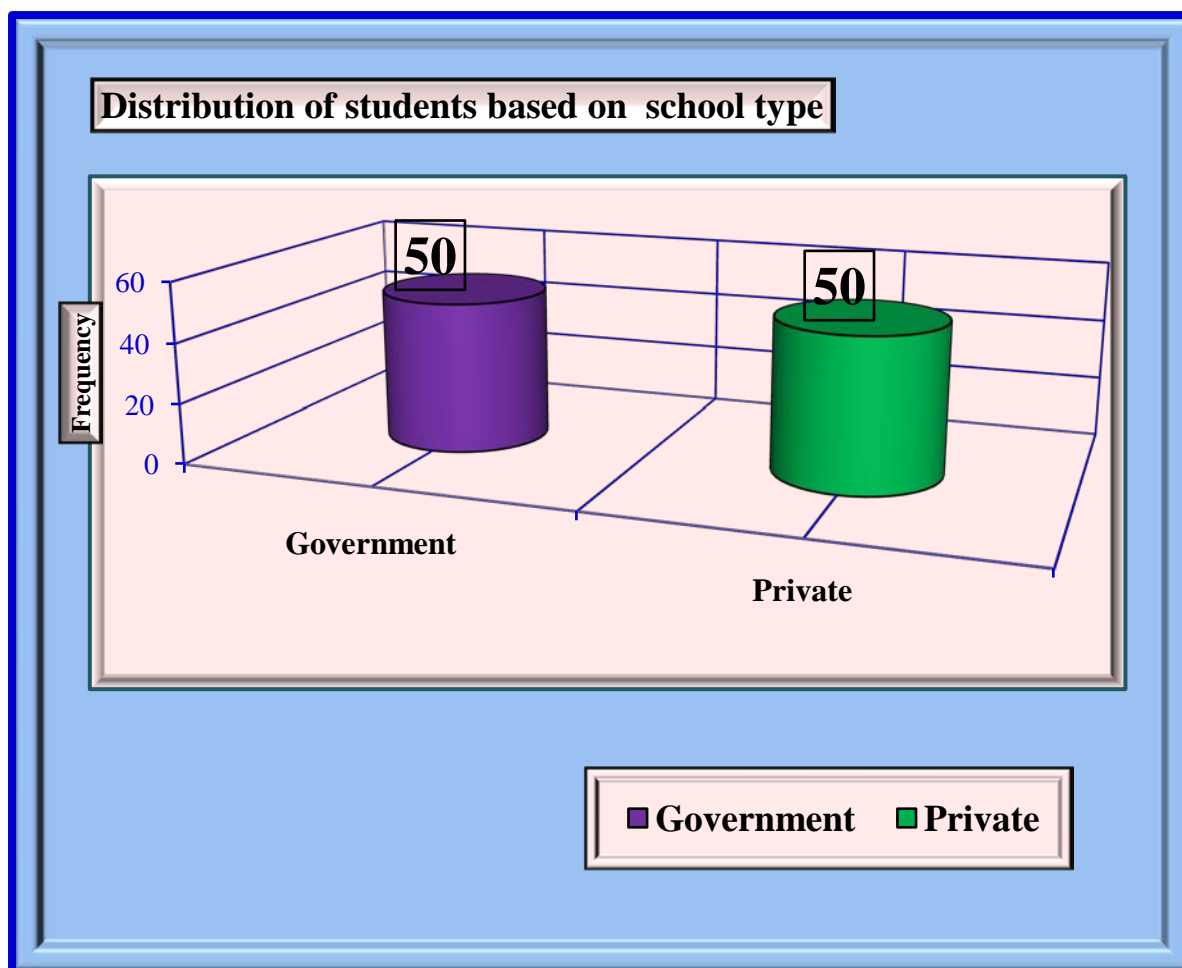
Fig. - Distribution of respondents (students) based on school type.

Table.4 - Distribution of Respondents (Teachers) based on education, marital status and income (per month):

S.No.	Educational qualification			Marital status			Income (per month)		
1	G	P.G.	Other	M	UM	Other	Below10000	10000 - 25000	25000 - Above
2	10 (20%)	31 (62%)	9 (18%)	17 (34%)	30 (60%)	3 (6%)	10 (20%)	28 (56%)	12 (24%)
3	Total (N) =50			Total (N) =50			Total (N) =50		

The table has shown the distribution of respondents (teachers) based on their education, marital status and income (per month).**Majority (62%)** teacher respondents were Post Graduate whereas (20%) were Graduate and **minimum (18%)** were other educational qualification. In marital status of respondents (60%) were unmarried teachers, (34%) were married teachers and (6%) were other (widow, single, living etc).In income per month (56%) has income 1000 – 25000, (24%) has above - 10000 and (20%) has below 10000 income.
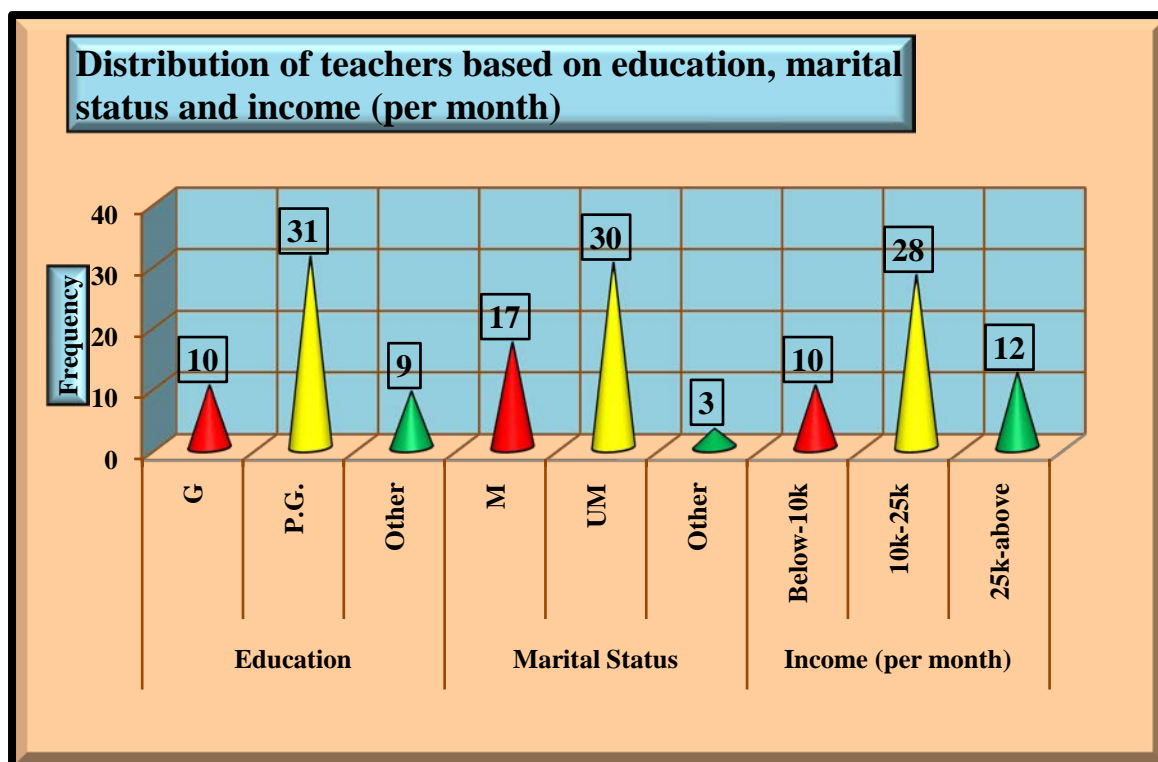
Fig. - Distribution of respondents (teachers) based on education, marital status and income (per month).

Table.5 - Distribution of Respondents (Students and Teachers) based on subjects:
The above table showed the age of respondents (Students and Teachers). **Majority (34%)** of

S. No.	Student's subject like most				Teacher's teaching subject			
1	Com.	Math's	Science	Others	Com.	Math's	Science	Others
2	34 (34%)	28 (28%)	25 (25%)	13 (13%)	15 (30%)	14 (28%)	12 (24%)	9 (18%)
3	Total (N) =100				Total (N) =50			

student's respondents like computer subject whereas (28%) liked mathematics, (25%) liked science and **minimum (13%)** student's respondents liked other subjects. Teachers respondents most of taught computer subject (30%), (28%) taught mathematics, (24%) taught science and (18%) taught other subjects (English, History, Geography etc)
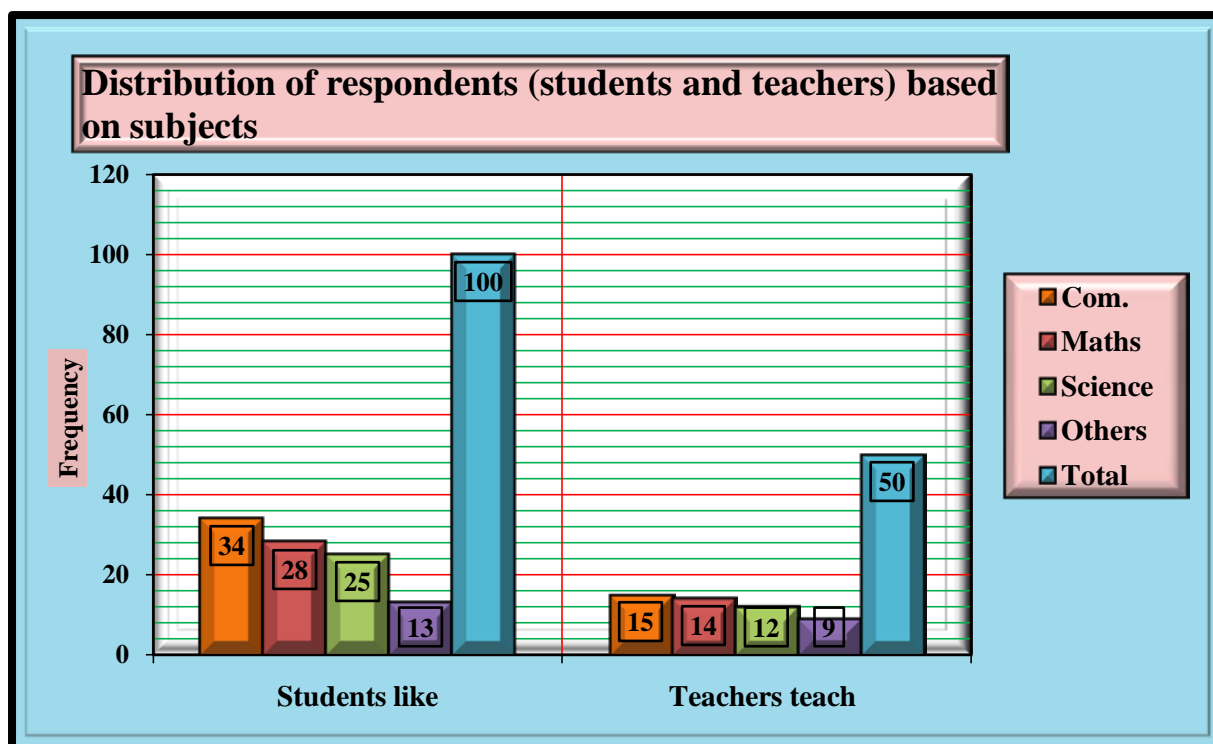
Fig. – Distribution of respondents (students and teachers) based on subjects.

Table.6 - Distribution of Respondents (Teachers) based on done any training:

S. No.	Training	Frequency	Percent (%)
1	ICT training course	29	58.0
2	Animation	11	22.0
3	Other	10	20.0
4	**Total (N)**	**50**	**100.0**

The above table shown distribution of teacher's respondents based on done any training. **Majority (58%)** belong to ICT training course whereas (22%) were belong animation and **minimum (20%)** were belong other courses.
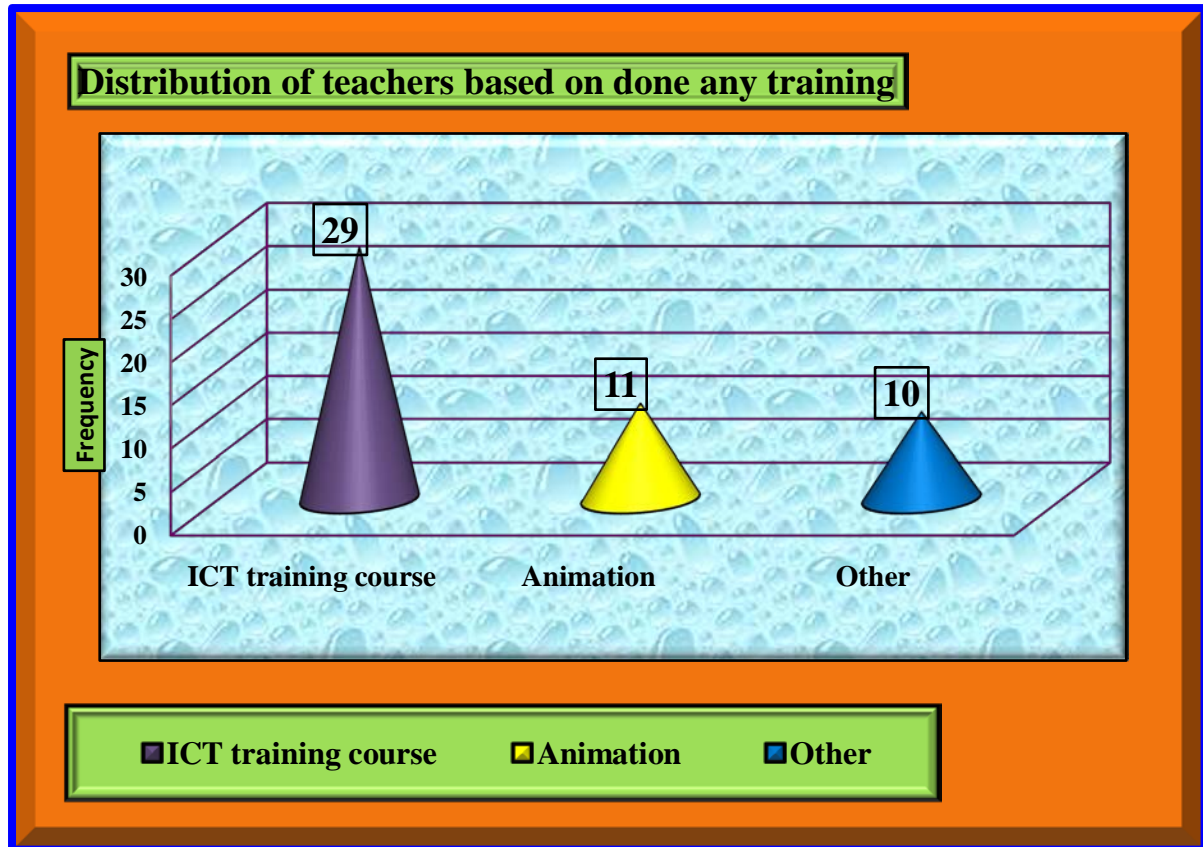
Fig. Distribution of respondents (teachers) based on done any training.

Testing of hypothesis

H_o, **No significant differences exist in different types of ICT and their positive influence in secondary education students.**

Table.– Mean, SD & t- value of different types of ICT and their positive influence in secondary education students based on student's age:

Variable	14-16		16-18		t- value	Sig.
	Mean	**SD**	**Mean**	**SD**		
Knowledge about ICT	1.54	.505	1.34	.477	4.021	.048*
Educational videos develops deep content thinking	1.02	.156	1.80	.406	42.663	.000***
Interactive whiteboard makes more capable and motivated	1.20	.401	1.34	.477	11.314	.001***
Projector enhances various skills (Painting, Art, etc.) in weak students	1.27	.449	1.56	.501	12.346	.001***
Photoshop make education interesting	1.39	.494	1.73	.448	5.291	.024*
ICT develops communication skills	1.44	.502	1.56	.501	.001	.974
PowerPoint presentations are helpful for class discussions	1.49	.506	1.39	.492	1.983	.162
Multimedia elements makes education interactive for engaging students	1.34	.480	1.31	.464	.554	.458

(p<0.05*) & (P<0.001***)

The above table shown the high significant differences in educational videos develops deep content thinking, interactive whiteboard makes more capable and motivated and projector enhances various skills (Painting, Art, etc.) in weak students. Significance differences found in knowledge about ICT and Photoshop make education interesting. No significance difference shown in ICT develops communication skills; PowerPoint presentations are helpful for class discussions and multimedia elements makes education interactive for engaging students.

Fig.– *Significance value of different types of ICT and their positive influence in secondary education students based on student's age.*

Table. – Mean, SD & t- value of different types of ICT and their positive influence in secondary education students based on student's gender:

Variable	Boy		Girl		t-value	Sig.
	Mean	SD	Mean	SD		
Knowledge about ICT	1.22	.418	1.62	.490	4.388	.001***
Educational videos develops deep content thinking	1.50	.505	1.46	.503	.397	.576
Interactive whiteboard makes more capable and motivated	1.56	.501	1.00	.000	7.897	.000***
Projector enhances various skills (Painting, Art, etc.) in weak students	1.08	.274	1.80	.404	10.428	.000***
Photoshop make education interesting	1.48	.505	1.70	.463	2.272	.003*
ICT develops communication skills	1.48	.505	1.54	.503	.595	.707
PowerPoint presentations are helpful for class discussions	1.40	.495	1.46	.503	.601	.269
Multimedia elements makes education interactive for engaging students	1.22	.418	1.42	.499	2.173	.000***

(p<0.05*) & (P<0.001***)

The above table shown highly significant differences know about ICT, interactive whiteboard makes more capable and motivated and projector enhances various skills (Painting, Art, etc.) in weak students and Multimedia elements makes education interactive for engaging students. No significant differences were viewed in educational videos develops deep content thinking, ICT develops communication skills and PowerPoint presentations are helpful for class discussions whereas significant differences shown in Photoshop make education interesting.

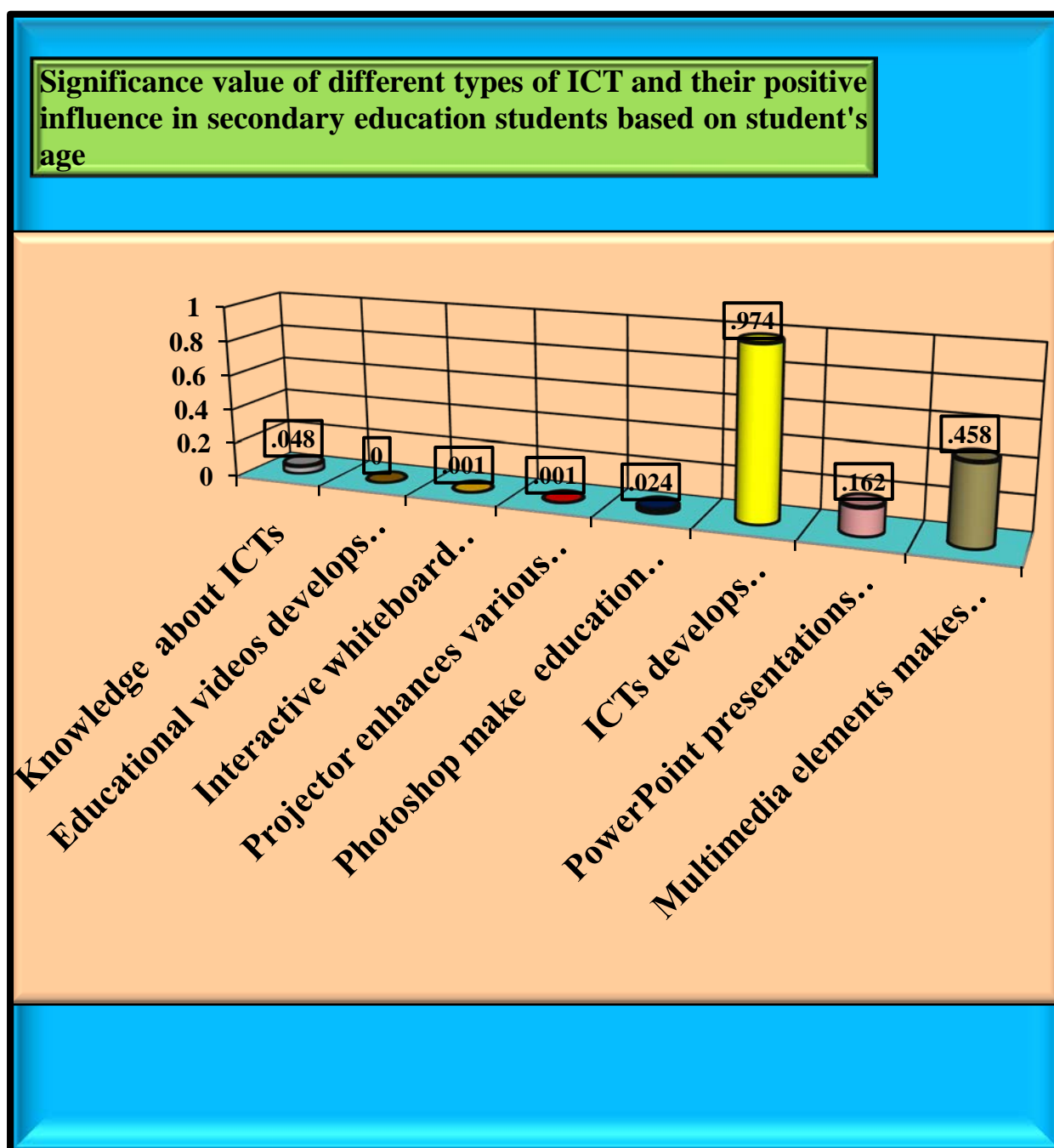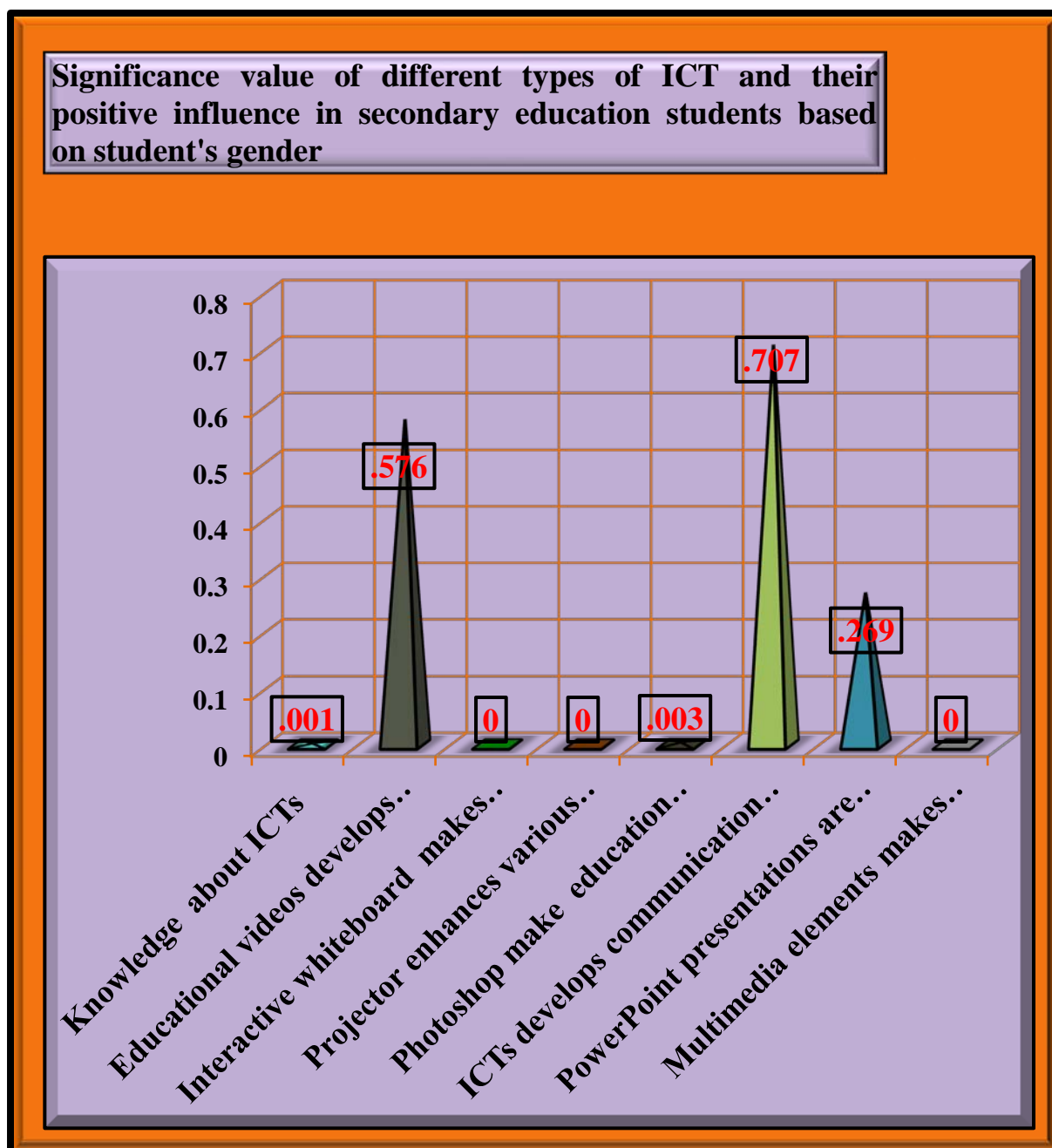*Fig.– Significance value of different types of ICT and their positive influence in secondary education students based on student's gender.*

H₁No significant differences exist in effects of ICT on academic motivation in secondary education students.

Table. - Mean, SD & t- value of effects of ICT on academic motivation in secondary education students based on student's gender:

Variable	BOY		GIRL		t- value	Sig.
	Mean	SD	Mean	SD		
Laptops enhances curiosity	1.48	.505	1.32	.471	7.018	.009*
Digitalization makes relationship between literacy, technology and learning	1.14	.351	1.76	.431	6.743	.011*
Interactive media (I pad, cell phone and internet) develops socialism	1.34	479	1.44	.501	3.576	.062
Telecommunication devices helps in collaboration and communication	1.05	.221	1.43	.500	204.916	.000***
Projector presentations increases self confidence	1.28	.454	1.84	.370	8.748	.004*

(p<0.05*) & (P<0.001***)

The table shown significance differences in laptops enhance curiosity, digitalization makes relationship between literacy, technology and learning, telecommunication devices help in collaboration and communication among students and Projector presentations increases self-confidence. No significance differences shown in interactive media (cell phone and internet) develop socialism.

Fig.– Significance value of effects of ICT on academic motivation in secondary education students based on student's gender.

Table. - Mean, SD & t- value of effects of ICT on academic motivation in secondary education students based on student's school type

Variable	Government		Private		t-value	Sig.
	Mean	SD	Mean	SD		
Laptops enhances curiosity	1.36	.485	1.32	.471	.694	.407
Digitalization makes relationship between literacy, technology and learning	1.10	.303	1.76	.431	15.651	.000***
Interactive media (I pad, cell phone and internet) develops socialism	1.20	.404	1.38	.490	15.740	.000***
Telecommunication devices helps in collaboration and communication	1.48	.505	1.70	.463	9.040	.003*
Projector presentations increases self confidence	1.36	.485	1.84	.370	22.520	.000***

(p<0.05*) & (P<0.001***)

The above table shown high significance differences in digitalization makes relationship between literacy, technology and learning, interactive media (cell phone and internet) develops socialism and Projector presentations increases self confidence. Significance differences shown in telecommunication devices help in collaboration and communication whereas no significance differences shown in laptops enhance curiosity.
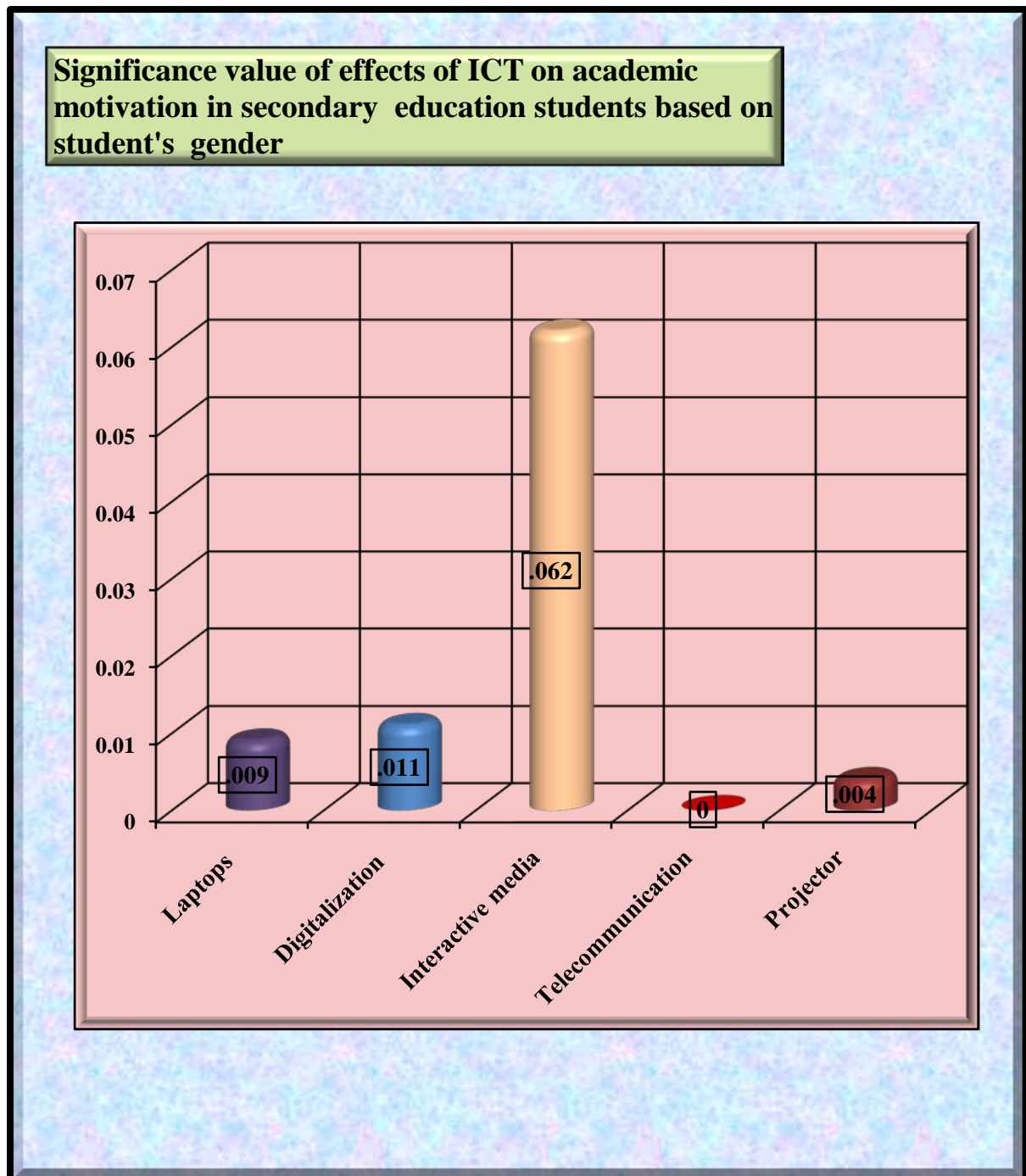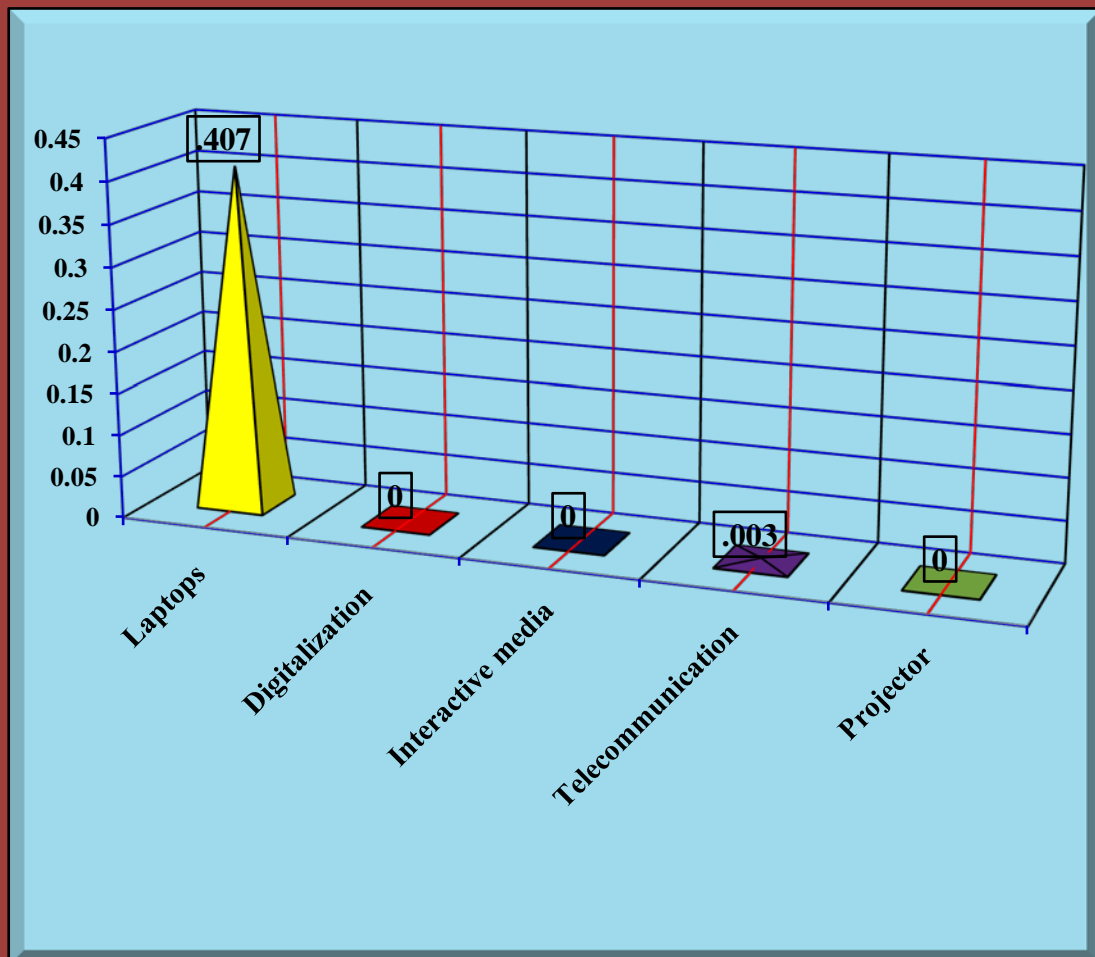
Fig. Significance value of effects of ICT on academic motivation in secondary education students based on student's school type.

H₂ No significant differences viewed in acquainted secondary education students about ICT for their concept formation in various subject.

Table. -Mean, SD & t- value of acquainted secondary education students about ICT for their concept formation in various subject based on student's gender:

Variable	Boy		Girl		t-value	Sig.
	Mean	SD	Mean	SD		
Interactive interaction with ICT tools improve presentation skills in Computer	1.48	.505	1.32	.471	7.018	.009*
Develops graphical, statistical & spatial analysis skills in Mathematics	1.14	.351	1.76	.431	6.743	.011*
Explains theories, laws and numerical in Science	1.34	.479	1.44	.501	3.576	.062
Problem solves in speaking English and grammar	1.48	.505	1.44	.501	.508	.478
Experience alternative images of people, places, environments & develop mapping skills, geographical enquiry skills in History & Geography	1.28	.454	1.84	.370	8.748	.004*

(p<0.05*) & (P<0.001***)

The table shown significance differences in interactive interaction with ICT tools improve presentation skills in Computer, develops graphical, statistical & spatial analysis skills in Mathematics and experience alternative images of people, places, environments &develop mapping skills, geographical enquiry skills in History & Geography. No significance differences shown in explains theories, laws and numerical in Science and Problem solves in speaking English and grammar.

significance value of acquainted secondary education students about ICT for their concept formation in various subject based on student's gender

.478

0.5

0

.009   .011   .062   .004

■ Interactive interaction with ICTs tools improve presentation skills in Computer

■ Develops graphical, statistical & spatial analysis skills in Mathematics

■ Explains theories, laws and numerical in Science

■ Problem solves in speaking English and grammar

■ Experience alternative images of people, places, environments & develop mapping skills, geographical enquiry skills in History & Geography

Fig. Significance value of acquainted secondary education students about ICTs for their concept formation in various subject based on student's gender.

Table. Mean, SD & t- Value of acquainted secondary education students about ICT for their concept formation in various subject based on student's school type:

Variable	Government		Private		t-value	Sig.
	Mean	SD	Mean	SD		
Interactive interaction with ICT tools improve presentation skills in Computer	1.28	.454	1.84	.370	8.748	.004*
Develops graphical, statistical & spatial analysis skills in Mathematics	1.50	.505	1.46	.503	.397	.576
Explains theories, laws and numerical in Science	1.53	.506	1.40	.494	2.725	.102
Problem solves in speaking English and	1.20	.404	1.38	.490	15.740	.000***

Variable	Government		Private		t-value	Sig.
	Mean	SD	Mean	SD		
grammar						
Experience alternative images of people, places, environments & develop mapping skills, geographical enquiry skills in History & Geography	1.56	.501	1.00	.000	7.897	.000***

(p<0.05*) & (P<0.001***)

The tables shown high significance differences in problem solves in speaking English and grammar and experience alternative images of people, places, and environments & develop mapping skills, geographical enquiry skills in History & Geography. No significance differences shown in develops graphical, statistical & spatial analysis skills in Mathematics and explains theories, laws and numerical in Science whereas significance difference shown in interactive interaction with ICTs tools improve presentation skills in Computer.
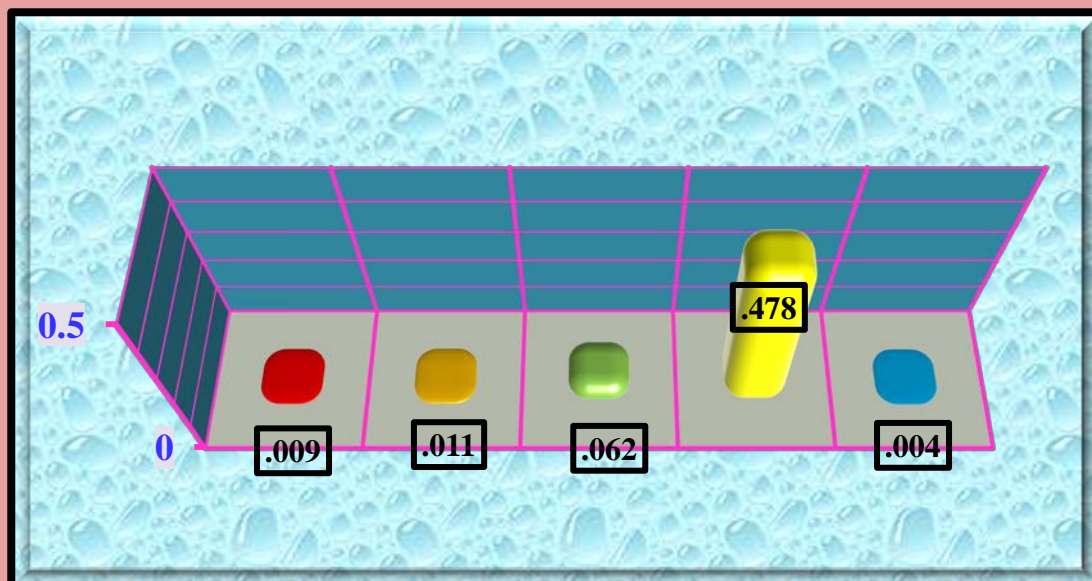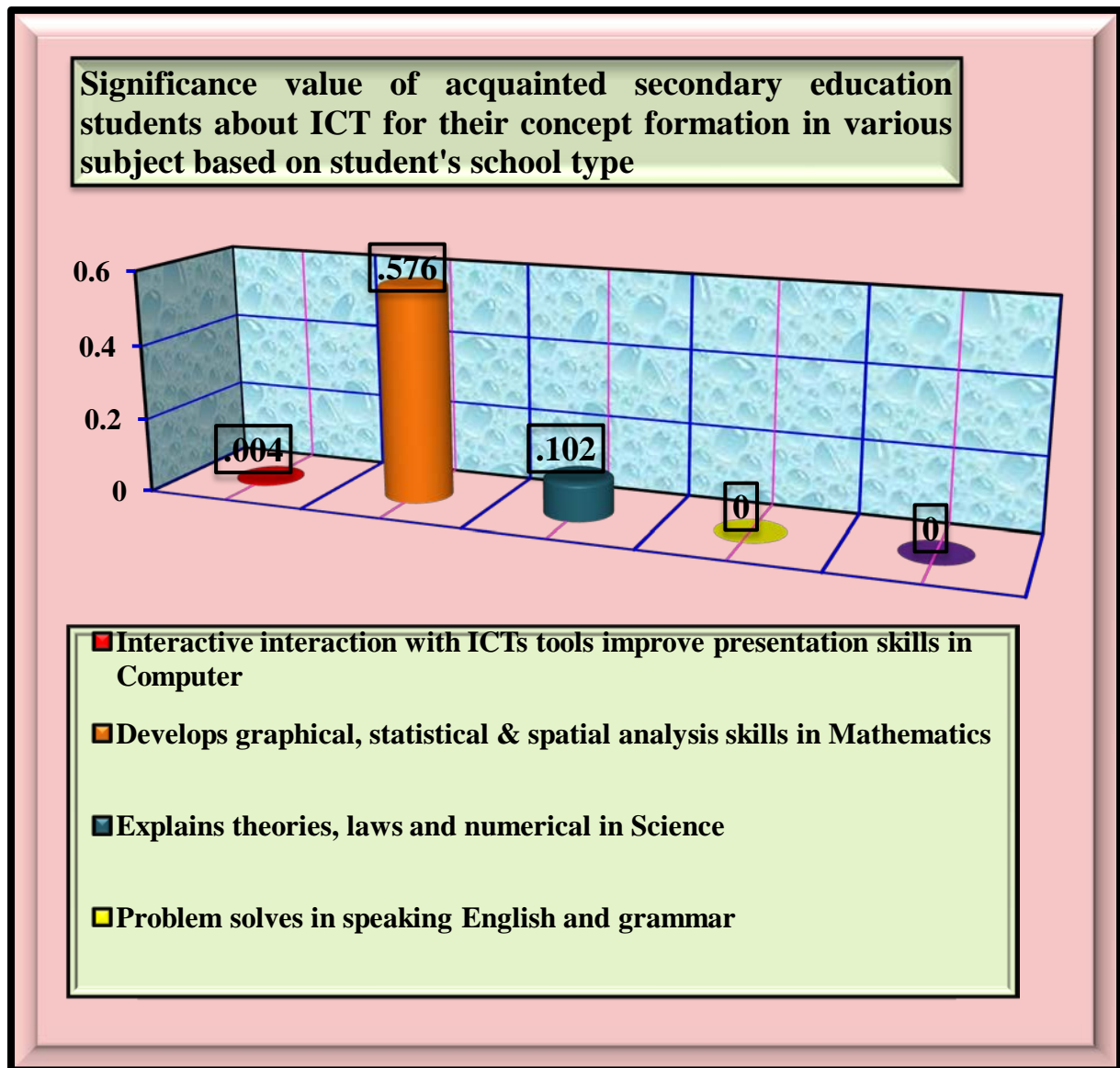
Fig. Significance value of acquainted secondary education students about ICT for their concept formation in various subject based on student's type of school.

H₃ No significant differences showed in impact of ICT in secondary education students in government and private schools.

Table. Mean, SD & t- Value of impact of ICT in secondary education students in government and private schools:

Variable	Government		Private		t- value	Sig.
	Mean	SD	Mean	SD		
Develops physical problems	1.06	.240	1.46	.503	159.620	.000***
Increases internet dependency	1.05	.221	1.43	.500	204.916	.000***
Negatively affects personality of students	1.52	.505	1.32	.471	7.018	.009*
Creates confusion sometimes	1.92	.274	1.88	.328	1.777	.186

(p<0.05*) & (P<0.001***)

The table shown high significance difference in develops physical problems and increases internet dependency. Significance differences shown in negatively affect personality of students whereas no significance difference shown in creates confusion sometimes.
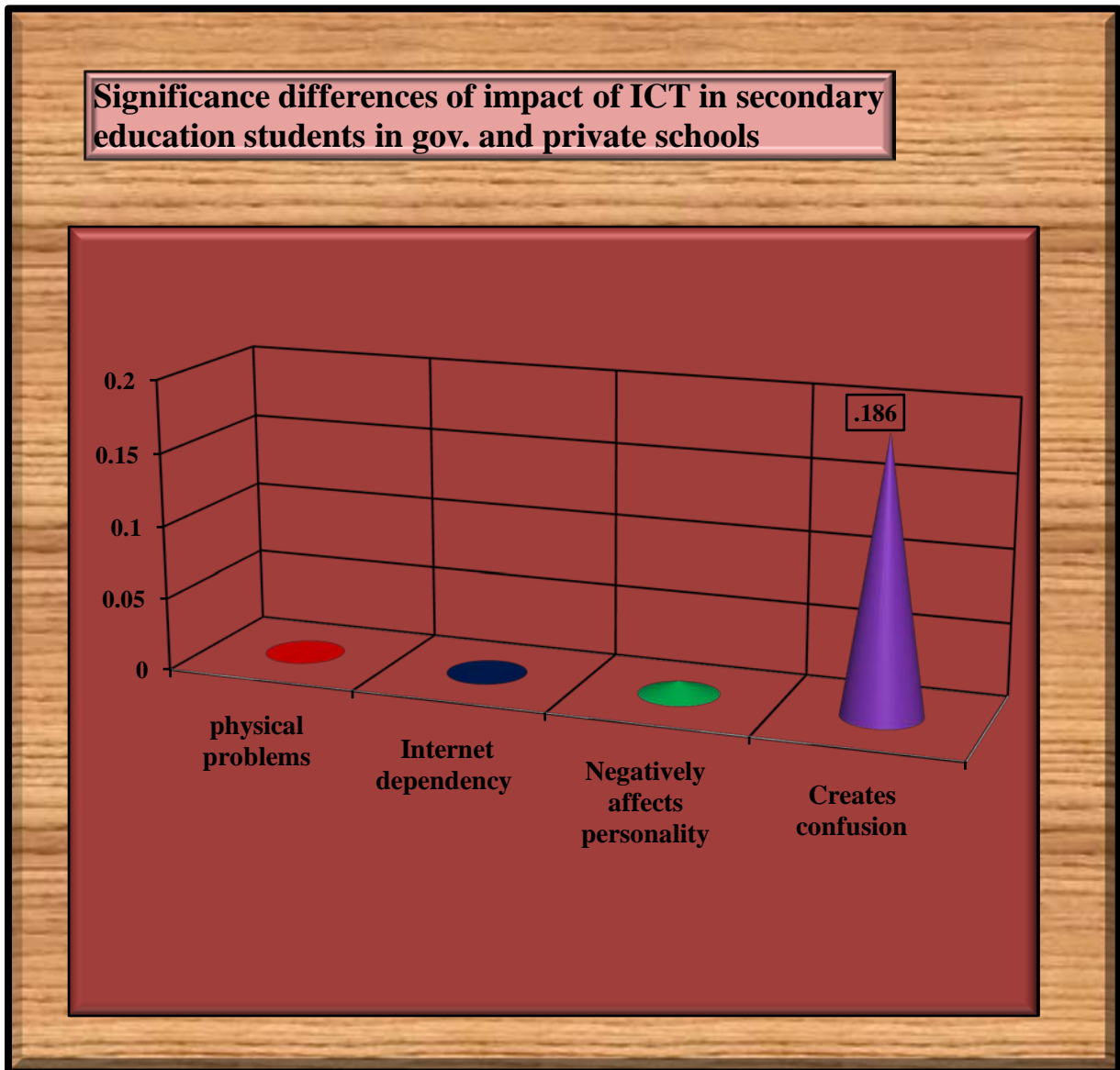
Fig. Significance differences of impact of ICT in secondary education students in government and private schools.

H₄ No significant differences exist in knowledge of ICT among teachers of secondary education.

Table. Mean, SD & f- value of knowledge of ICT among teachers of secondary education based on teacher's age:

Variable	20-25		26-31		31- above		f-value	Sig
	Mean	SD	Mean	SD	Mean	SD		
Operating System	1.06	.236	1.00	.000	1.83	.389	53.720	.000***
Word Processor	1.17	.383	1.00	.000	1.08	.289	1.811	.175
Spreadsheet Processor	1.22	.428	2.00	.000	1.00	.000	70.769	.000***
Portable Music And Video Player	1.17	.383	1.00	.000	1.67	.492	15.525	.000***
PowerPoint In Classroom	1.00	.000	1.05	.224	1.00	.000	.742	.482
Input Source	1.00	.000	1.65	.489	1.25	.452	14.100	.000***
Output Sources	1.00	.000	1.00	.000	1.00	.000		
Designing Programs	1.39	.502	1.45	.510	1.00	.000	4.208	.021*
Animation	1.00	.000	1.00	.000	1.00	.000		
Telecommunication Tools	1.17	.383	1.50	.513	1.00	.000	6.643	.003*
Subject Specific Software	1.00	.000	1.60	.503	1.00	.000	21.150	.000***
Digital Recorder	1.80	.410	1.25	.452	1.40	.495	20.601	.000***

($p<0.05*$) & ($P<0.001***$)

The table has shown high significance differences in operating system, spreadsheet processor, portable music and video player, input source, subject specific software and digital recorder. Significance differences shown in designing programs and telecommunication tools whereas no significance differences shown in word processor and PowerPoint in classroom.

Fig. Significance value of knowledge of ICT among teachers of secondary education based on teacher's age.

Table. Mean, SD & t- value of knowledge of ICT among teachers of secondary education based on teacher's gender:

Variable	Male		Female		t- value	Sig.
	Mean	SD	Mean	SD		
Operating System	1.00	.000	1.44	.507	1642.667	.000***
Word Processor	1.00	.000	1.00	.000	27.903	.000***
Spreadsheet Processor	1.16	.374	1.16	.374	.299	.587
Portable Music And Video Player	1.00	.000	1.00	.000	1642.667	.000***
PowerPoint In Classroom	1.44	.507	1.44	.507	4.355	.042*
Input Source	1.04	.200	1.04	.200	32.424	.000***
Output Sources	1.00	.000	1.00	.000		
Designing Programs	1.12	.332	1.12	.332	5.406	.024*
Animation	1.52	.510	1.52	.510		
Telecommunication Tools	1.00	.000	1.00	.000	51.668	.000***
Subject Specific Software	1.00	.000	1.00	.000	43.199	.000***
Digital Recorder	1.40	.500	1.40	.500	5.610	.022*

(p<0.05*) & (P<0.001***)

The table has shown high significance differences in operating system, word processor, portable music and video player, input source, telecommunication tools, and subject specific software. Significance differences has shown in PowerPoint in classroom, designing programs and digital recorder and whereas no significance differences shown in spreadsheet processor.
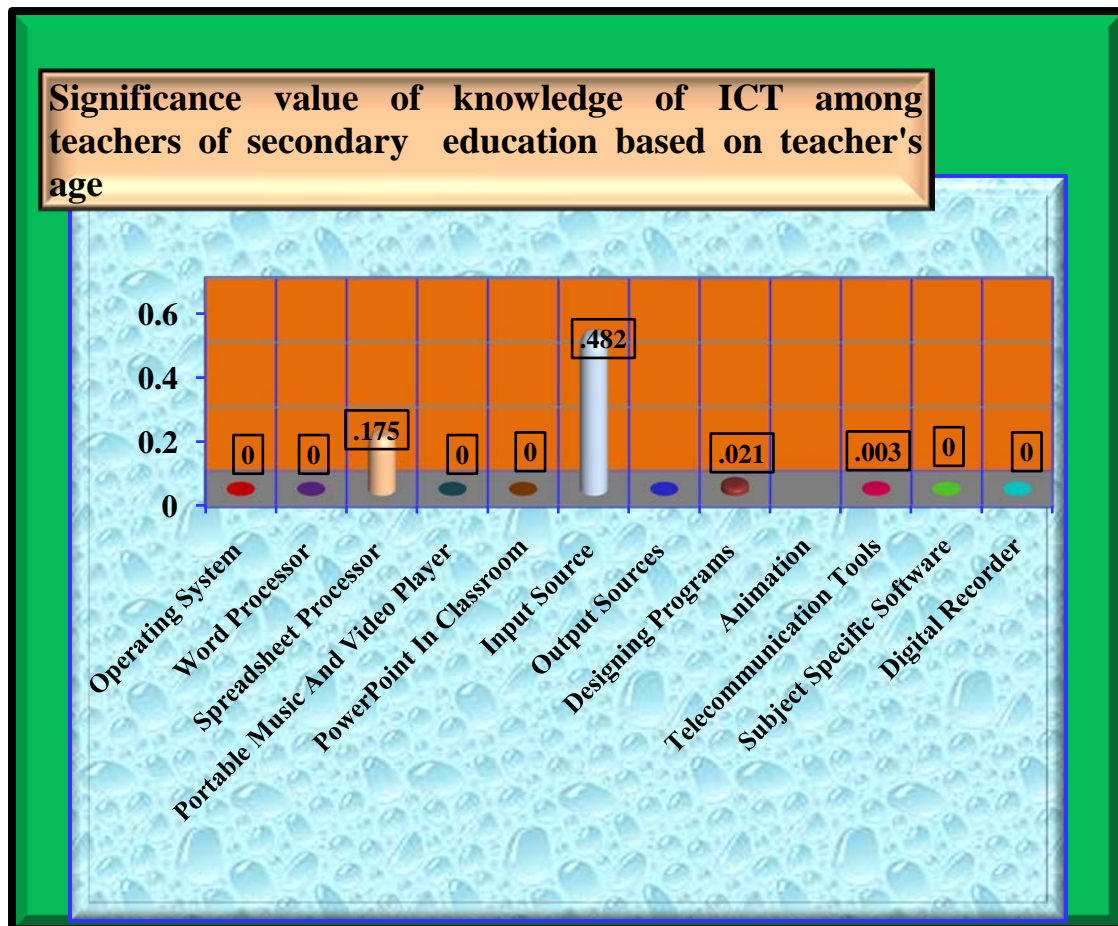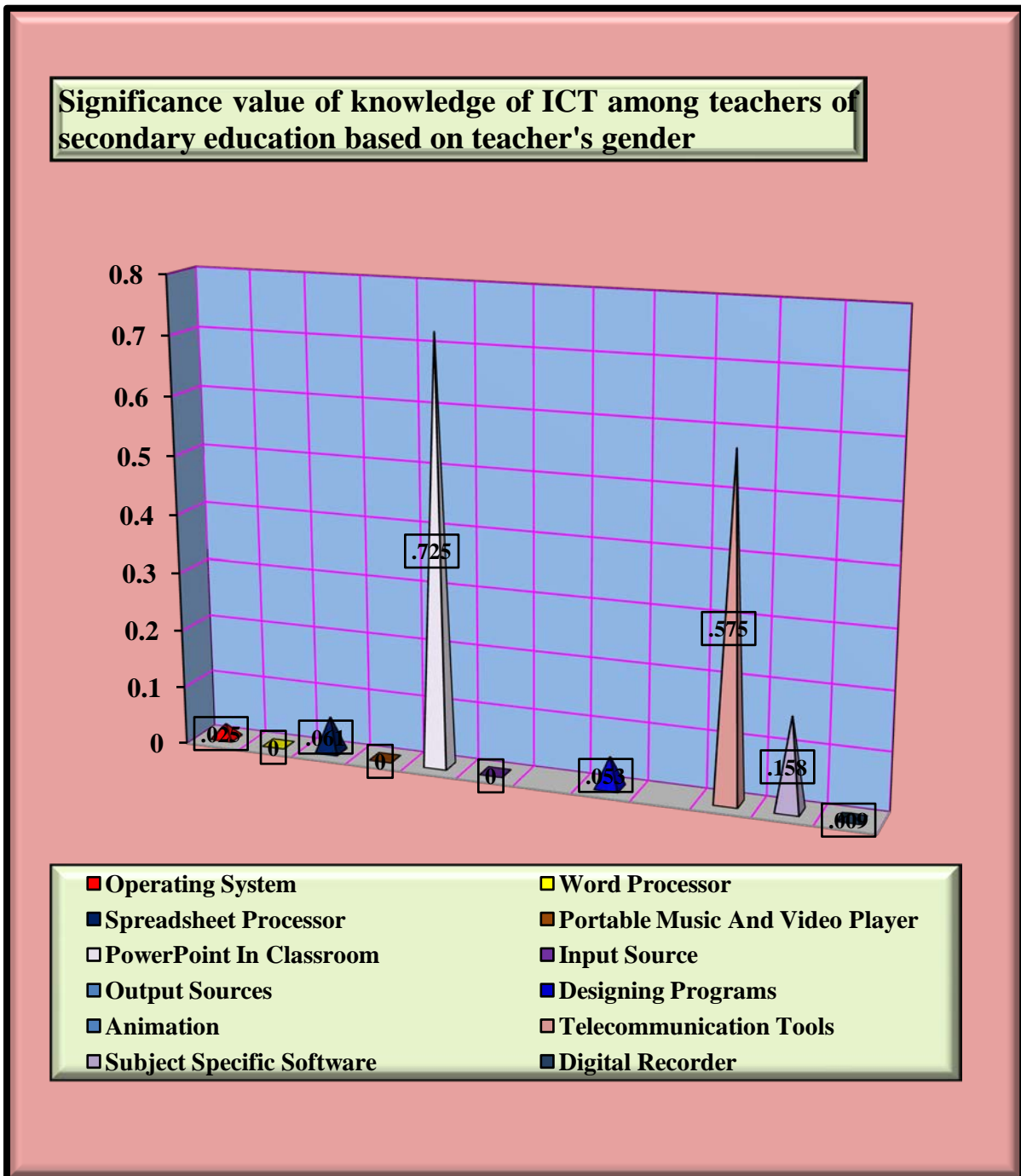

Fig. Significance value of knowledge of ICT among teachers of secondary education based on teacher's gender.

Table. Mean, SD & f- value of knowledge of ICT among teachers of secondary education based on done any training by teachers.

Variable	ICT training course		Animation		Other		f-value	Sig
	Mean	SD	Mean	SD	Mean	SD		
Operating System	1.14	.351	1.00	.000	1.70	.483	12.841	.000***
Word Processor	1.14	.351	1.00	.000	1.00	.000	1.579	.217
Spreadsheet Processor	1.41	.501	2.00	.000	1.10	.316	13.463	.000***
Portable Music And Video Player	1.21	.412	1.00	.000	1.50	.527	4.278	.020*
PowerPoint In Classroom	1.03	.186	1.00	.000	1.00	.000	.353	.705
Input Source	1.03	.186	2.00	.000	1.40	.516	52.470	.000***
Output Sources	1.00	.000	1.00	.000	1.00	.000		
Designing Programs	1.34	.484	1.55	.522	1.00	.000	4.055	.024*
Animation	1.00	.000	1.00	.000	1.00	.000		
Telecommunication Tools	1.38	.494	1.18	.405	1.00	.000	3.210	.049*
Subject Specific Software	1.28	.455	1.36	.505	1.00	.000	2.202	.122
Digital Recorder	1.21	.412	1.91	.302	1.40	.516	11.454	.000***

($p<0.05$*) & ($P<0.001$***)

The table has shown high significance differences in operating system, spreadsheet processor, input source and digital recorder. Significance differences shown in portable music and video player, designing programs, telecommunication tools whereas no significance difference shown in word processor, PowerPoint in classroom and subject specific software.
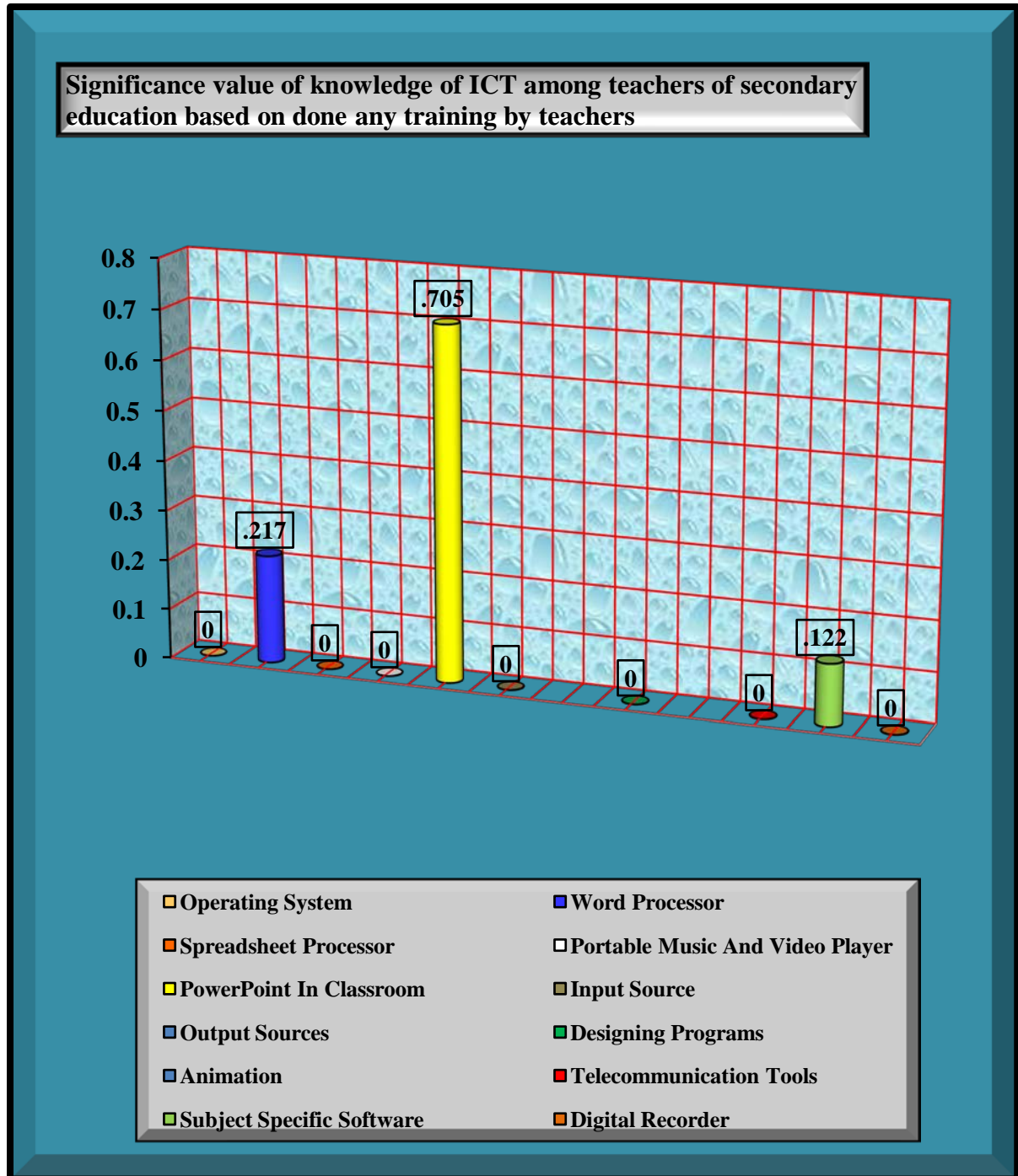
Fig. Significance value of knowledge of ICT among teachers of secondary education based on done any training by teacher's.

SUMMARY AND CONCLUSION

ICT play an important role in everyday activities in human being. It has changed the old way of teaching & develops more interactive methods. ICT tools such as computers, laptops, tablets, simple mobiles or android mobiles, landline phones/ basic phone, projectors, interactive whiteboard, video conferencing, e- mail, fax, scanner, digital camera, video recorder etc connect through internet, one place to other. Secondary education covers 14-18 aged students. **(National Policy on Education, 1986)** There is two features of secondary education is present: (a) Emphasis on inclusion (b) Emphasis on profession based vocational training. ICT application in secondary education used for access universal, advanced and authentic information. Through to ICT teachers and students can easily represent their thoughts with each other. It promotes students centered learning with the help of students get information from school as well as home. Different types of ICT tools engaged students with various subjects like Computer, English, Science, Mathematics and Others (History, Geography etc). **(Abdullahi, 2014; Desig, 2008)**Through to ICT tools students may be able to learn new things in computer. **(Gamboa, 2011)** There are many software available for solve numerical and their related problems. Provide new interactive ways for improve grammar, vocabulary, punctuation, translation and part of speech in English. Explains laws and concepts on various topics in Science. In other subjects such as History and Geography presents actual pictures and creates situations related to a topic. Along with there are many negative influencing factors of ICT and its application in secondary education. Students spend more time with computer screen, which increase eye problems (low vision / use of optical, lenses), and overweight. Continuous use of ICT students becomes more dependent on Internet, online programmes, social sites, unneedable sites or software. Sometimes students as seen in animated clips, they react like that. Students act like characters as they seen in narration to the situation or events. **(Dix, 2007)** For interactive teaching learning process ICT application play tremendous role in secondary education. Secondary education teachers provide authentic and effective knowledge through ICT in innovative ways. By ICT, teachers are free to choose ICT software to fit within a particular topic and merely present working a different way. **(Gupta, 2012)**

The study was conducted in the year 2016 in Lucknow city, Uttar Pradesh state. There were different secondary schools (government and private schools) selected from the urban areas of Lucknow city. A total 150 respondents that includes teachers and students were selected for the study. Random sampling method was used for sample selection. A pretested self – made questionnaire schedule was used for data collection. Data analysis done through SPSS and graphs made by Microsoft excel.

The result shown the different types of ICT and their positive influence in secondary education is significant on the base of age, gender, and type of school, medium of school. It viewed in the study that students have knowledge about ICT, videos develop deep thinking, usage of interactive whiteboard, and projector and PowerPoint are help to motivate and develop skills and provide collaborative learning in secondary education. Multimedia tools provide information in interactive and engaging way. There is a significant difference shown in effects of ICT on academic motivation in secondary education students based on age,

gender, type of school and medium of school. Laptops use, digitalization, interactive media, telecommunication devices and PowerPoint presentation. Students make more challenging, authenticating. Secondary level students acquainted with ICT software, which used by teachers in various subjects for concept formation. There found significant result in develops interactive interaction with ICT tools improve presentation skills in Computer, develops graphical, statistical & spatial analysis skills in Mathematics, explains theories, laws and numerical in Science, problem solves in speaking English and grammar and Experience alternative images of people, places, environments &develop mapping skills, geographical enquiry skills in History & Geography. Result revealed that the teachers have good commands on ICT tools. Teachers have knowledge about operating system, word processor, and spreadsheet processor. They know appropriate use of MP3/MP4, input sources and output sources and designing programmes. They explained through PowerPoint presentation, animation, videos. Teachers used telecommunication tools for effective communication skills. Teachers provide relevant scientific information through to ICT to secondary education students.

CONCLUSION

The major finding of this research is that usage of different types of ICT in secondary education student is promoting student-thinking levels, providing solution of problems, develops communication skills, engage secondary education students in interactive manner. High significance differences found on effects of ICT in secondary education students for academic motivation increases excitement about getting new knowledge on particular topics. ICT develop socialism, communication skills and collaboration among secondary education students. ICT provide interactive information, explanation, develop enquiry skills and environment in which student can feel comfort. Along with there is some negative impact having ICT such as physical problems. ICT stools increase dependency on internet, online teaching, specific software/ application. Students become confusing about content, pictures, videos and situation. Teachers used widely ICT tools in providing knowledge of basic concept formation in depth, solution to numerical problems and theoretical explanation. They used electronic ICT tools appropriately and according the demand of subject content. The hypothesis was rejected. In this study significance differences shown in use of ICT as an educational tool in secondary school education.

SUGGESTION

To ensure adequate use of ICT as an educational tool in secondary education for better academic achievement of student's, recommend as follows,

- The first recommendation is to look closely at how teacher-training programs in secondary school level prepare teachers for technology-based teaching.
- This study is limited to those students studying in urban areas secondary education schools. In future can include rural areas secondary education students involve for knowing their point of views regarding ICT compulsion in schools.
- Future researchers can take more than 150 sample size to learn about the provision and utilization of ICT for effective interactive learning. It is suggested to researchers can learn about educational organization programs for teachers and students to use ICT in curricula and different subjects related activities.
- It is suggested to researchers can learn about positive and negative influence of student's personality, self-esteem and confidence by using ICTs tools at schools as well as home.
- Future researchers can learn about effects of subject specific ICT applications/ software, in different subjects for their useful aid to representing and helping to solve problems and accomplish tasks.
- For future research work, it suggested include impact of ICT on student's physical and mental development and personality.

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QUESTIONNAIRE FOR STUDENTS
A STUDY ABOUT USE OF ICT AS AN EDUCATIONAL TOOL IN SECONDARY SCHOOL EDUCATION

General information –

Name –

Age	14-16 [ ]
	16-18 [ ]
gender	Boy [ ]
	Girl [ ]
Type of school	Government [ ]
	Private [ ]
Medium of school	Hindi [ ]
	English [ ]
Subject like most	Mathematics [ ]
	English [ ]
	Science [ ]
	Other [ ]

A STUDY ABOUT USE OF ICT AS AN EDUCATIONAL TOOL IN SECONDARY SCHOOL EDUCATION

Specific Information-

Section-A

S.no.	Questions	Yes	No
1	Do you know about ICT-		
2	Educational videos develops deep content thinking among students-		
3	Interactive whiteboard makes students more capable and motivated-		
4	Projector enhances various skills (Painting, Art, etc.) in weak students-		
5	Photoshop makes education interesting-		
6	ICTs develops communication skills in students-		
7	PowerPoint presentations are helpful for class discussions-		
8	Multimedia elements makes education interactive for engaging students-		

Section-B

S. no.	Questions	Yes	No
1	Laptops enhances curiosity among students-		
2	Digitalization makes relationship between literacy, technology and learning in students-		

S. no.	Questions	Yes	No
3	Interactive media (cell phone and internet) develops socialism among students-		
4	Telecommunication devices helps in collaboration among students-		
5	Projector presentations increase felling of unity for all in students-		

Section-C

S. no.	Questions	Yes	No
1	Interactive interaction with ICT tools improve presentation skills in Computer -		
2	Develops graphical, statistical & spatial analysis skills in Mathematics -		
3	Explains theories, laws and numerical in Science -		
4	Problem solves in speaking English and grammar -		
5	Experience alternative images of people, places, environments &develop mapping skills, geographical enquiry skills in History & Geography -		

Section-D

S. no.	Questions	Yes	No
1	Develops physical problems -		
2	Increases internet dependency -		
3	Negatively affects personality of students-		
4	Creates confusion sometimes-		

QUESTIONNAIRE FOR TEACHERS
A STUDY ABOUT USE OF ICT AS AN EDUCATIONAL TOOL IN SECONDARY SCHOOL EDUCATION

General information –

Name –

Sex	Male [ ] Female [ ]
Age	20-25 [ ] 26-30 [ ] 31- Above [ ]
Education	Graduate [ ] Postgraduate [ ] Other [ ]
Marital status	Married [ ] Unmarried [ ] Other [ ]
Income	Below 10,000 [ ] 10,000-20,000 [ ] Above 20,000 [ ]
Type of school	Government [ ] Private [ ]
Teaching subject	Mathematics [ ] English [ ] Science [ ] Other [ ]
Have you done any	ICT training course [ ] Animation [ ] Other [ ]

A STUDY ABOUT USE OF ICT AS AN EDUCATIONAL TOOL IN SECONDARY SCHOOL EDUCATION

Specific information –

S. no.	Questions	Yes	No
1	Do you use operating system (on/off computer)		
2	Do you use word processor (such as word program)		
3	Do you use spreadsheet processor (such as excel program)		
4	Do you use portable music and video player (Mp3/Mp4 player)		
5	Do you use PowerPoint in classroom		
6	Do you know about input source (PC, slate/ tablet etc.) of ICT		
7	Do you know about output sources (projector, interactive whiteboard, display devices etc.) of ICT		
8	Do you use designing programs (Photoshop, flash)		
9	Do you know about animation		
10	Do you use telecommunication tools		
11	Do you use subject specific software		
12	Do you use digital recorder		